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ONAN
ELECTRIC GENERATING PLANTS
CCK
SERIES

927-300 3AK68

PERFORMANCE CERTIFIED

We certify that when properly installed and operated this Onan electric plant will deliver the full power and the voltage and frequency regulation promised by its nameplate and published specifications. This plant has undergone several hours of running-in and testing under realistic load conditions, in accordance with procedures certified by an independent testing laboratory.

ONAN DIVISION of STUDEBAKER CORPORATION
Minneapolis 14, Minnesota

IMPORTANT...RETURN WARRANTY CARD ATTACHED TO UNIT

GENERAL INFORMATION

THIS OPERATOR'S MANUAL PROVIDES INFORMATION FOR PROPER INSTALLATION, OPERATION, AND MAINTENANCE PROCEDURES.

WE SUGGEST THIS BOOK BE KEPT HANDY SO THAT IT CAN BE READILY REFERRED TO WHEN NECESSARY, EITHER FOR ORDERING PARTS OR MAKING PLANT ADJUSTMENTS.

FOR MAJOR REPAIR INFORMATION, USE THE FORM PROVIDED BELOW. A SERVICE MANUAL WILL BE SENT UPON RECEIPT OF $1.00. INDIVIDUAL WIRING DIAGRAMS ARE AVAILABLE AND WILL BE INCLUDED, WHEN REQUESTED.

PLEASE!

WHEN FILLING OUT THE FORM, BE SURE YOU HAVE INDICATED THE MODEL AND SPEC NUMBER., AND THE SERIAL NUMBER EXACTLY AS SHOWN ON THE UNIT NAMEPLATE. THIS INFORMATION IS NECESSARY TO PROPERLY IDENTIFY THE UNIT AMONG THE MANY BASIC AND SPECIAL MODELS MANUFACTURED.

TRIM ALONG THIS LINE

ONAN

DIVISION of STUDEBAKER CORPORATION

2515 UNIVERSITY AVENUE S. E. MINNEAPOLIS 14, MINNESOTA

I ENCLOSE $1.00. PLEASE SEND ME A

MAJOR SERVICE MANUAL (Contains details for making all recommended repairs and general overhaul of unit)

IMPORTANT!

BE SURE TO INCLUDE COMPLETE MODEL, SPEC., AND SERIAL NUMBER OF UNIT (SEE ONAN NAMEPLATE)

MODEL AND SPEC. of my unit is _____

SERIAL NUMBER of my unit is _____

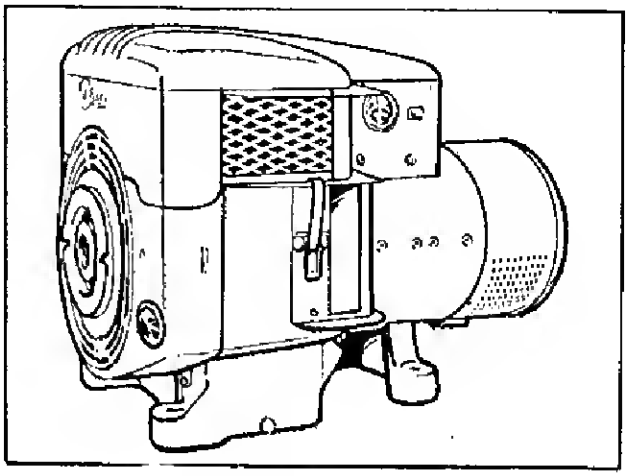
Name _____

St. or R.F.D. _____

City _____ Zone ___ State _____

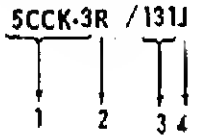
INTRODUCTION

When instructions in this manual refer to a specific model of generating plant, identify the model by referring to the *MODEL AND SPECIFICATION NO.* as shown on the plant nameplate. Electrical characteristics are shown on the lower portion of the plant nameplate.



TYPICAL MODEL CCK

How to Interpret MODEL and SPEC. NO.



1. Factory code for general identification.
2. Specific Type:
   M - MANUAL. Manually cranked for permanent or portable installations.
   E - ELECTRIC. Electric starting at the plant only.
   P - PORTABLE. Pull rope starting. Mounted in carrying frame for portable use.
   R - REMOTE. Electric starting. For permanent installation, can be connected to optional accessory equipment for remote or automatic control of starting and stopping.
   EV or RV - VACU-FLO. Same as *E* or *R*, with reversed (front end duct) cooling air flow.
3. Factory code for optional equipment.
4. Specification (Spec.) letter (advances when factory makes production modifications).

MANUFACTURER'S WARRANTY

The Manufacturer warrants, to the original user, that each product of its manufacture is free from defects in material and factory workmanship if properly installed, serviced and operated under normal conditions according to the Manufacturer's instructions.

Manufacturer's obligation under this warranty is limited to correcting without charge at its factory any part or parts thereof which shall be returned to its factory or one of its Authorized Service Stations, transportation charges prepaid, within one year after being put into service by the original user, and which upon examination shall disclose to the Manufacturer's satisfaction to have been originally defective. Correction of such defects by repair to, or supplying of replacements for defective parts, shall constitute fulfillment of all obligations to original user.

This warranty shall not apply to any of the Manufacturer's products which must be replaced because of normal wear, which have been subject to misuse, negligence or accident or which shall have been repaired or altered outside of the Manufacturer's factory unless authorized by the Manufacturer.

Manufacturer shall not be liable for loss, damage or expense directly or indirectly from the use of its product or from any cause.

The above warranty supersedes and is in lieu of all other warranties, expressed or implied, and of all other liabilities or obligations on part of Manufacturer. No person, agent or dealer is authorized to give any warranties on behalf of the Manufacturer nor to assume for the Manufacturer any other liability in connection with any of its products unless made in writing and signed by an officer of the Manufacturer.

DATED AUGUST 1, 1963

SPECIFICATIONS

M = manual start
R = remote start (electric crank)

	Model Series 4CCK		5CCK	
	M	R	M	R
Nominal dimension of plant (inches)				
Height	21	21	21	21
Width	21	21	21	21
Length (3- and 4-wire models, add 1-inch)	26-3/8	26-3/8	30	30
Number cylinders (horizontally opposed)	2	2	2	2
Displacement (cubic inch)	49.8	49.8	49.8	49.8
Cylinder bore	3-1/4	3-1/4	3-1/4	3-1/4
Piston stroke	3	3	3	3
RPM (for 60-cycle)	1800	1800	1800	1800
RPM (for 50-cycle)	1500	1500	1500	1500
Compression ratio	5.5:1	5.5:1	5.5:1	5.5:1
Ignition (type)				
Battery	No	Yes	No	Yes
Flywheel magneto	Yes	No	Yes	No
Battery voltage (ac plant)	None	12-V	None	12-V
Battery size (ac plant):				
SAE group 1H		two in series		two in series
Amp/hr. SAE rating - 20-hr (nominal)		105		105
Starting by pull rope (recoil) only	Yes	No	Yes	No
Starting by exciter cranking	No	Yes	No	Yes
Starting by starting motor ***	No	No	No	Yes
Battery charge rate amperes	6-Max.	6-Max.	6-Max.	6-Max.
Ventilation Required (cfm 1800 rpm)				
Engine (Pressure Cooling)	500	500	500	500
Engine (Vacu-Flo Cooling)	750	750	750	750
Generator	75	75	75	75
Combustion	32	32	32	32
Output rated at unity power factor load	All	All	All	All
Rating (output in watts)				
*50-cycle AC intermittent service	3500	3500	4250	4250
*50-cycle AC continuous service	3500	3500	4250	4250
**60-cycle AC intermittent service	4000	4000	5000	5000
**60-cycle AC continuous service	3500	3500	5000	5000
AC voltage regulation in ± %	4	4	5	5
AC frequency regulation in %	5	5	5	5
Revolving armature type generator	Yes	Yes	Yes	Yes
120/240-volt single phase model reconnectible	Yes	Yes	Yes	Yes
Rotating type exciter	Yes	Yes	Yes	Yes

* Basic 50-cycle model
** Basic 60-cycle model
*** Remote model 5CCK-150R only (Magnet Service DC Plant)

OPTIONAL EQUIPMENT

1. **GAS-GASOLINE CARBURETOR:**
   A combination carburetor for burning gasoline fuel or gaseous fuel.

2. **HIGH AIR TEMPERATURE CUTOFF:**
   Stops plant if temperature of engine discharged air rises too high. Air shutter mounted on Vacu-flo only.

3. **AIR SHUTTER:**
   Thermostatically controlled. Limits air flow when cold to accelerate warm-up. Minimizes cold back drafts when engine is stopped. High air temperature cutoff is standard with air shutter.

4. **SWITCHBOARD:**
   Contains instruments to measure ac amperes, ac volts, and to break over-loaded ac circuit. For wall mounting.

5. **AC RECEPTACLES:**
   Convenient for plugging in ac loads if needed.

6. **OIL BASE HEATER AND THERMOSTAT:**
   Electric heater aids cold starting.

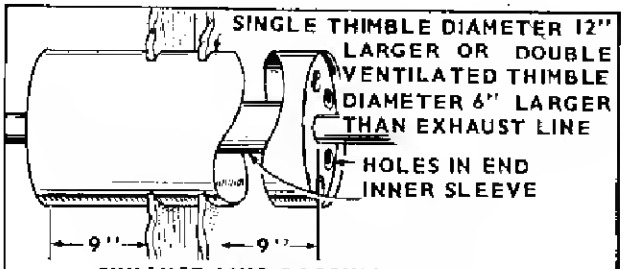
7. **AUTOMATIC DEMAND CONTROL:**
   Starts and stops plant automatically when ac load is turned on or off.

8. **LOAD TRANSFER CONTROL:**
   Controls running of plant and transfers load when primary ac power is interrupted.

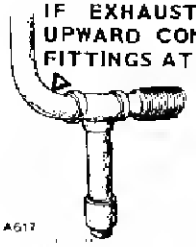
9. **SEPARATE FUEL TANK:**
   Various sizes.

10. **OTHER:**
    There is a series of other optional items that your dealer will discuss with you. Ask about them.

MEMORANDUM

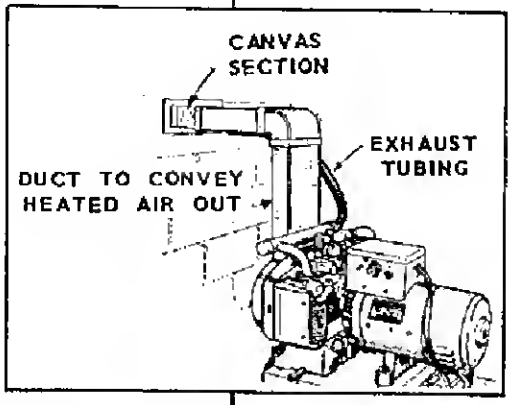


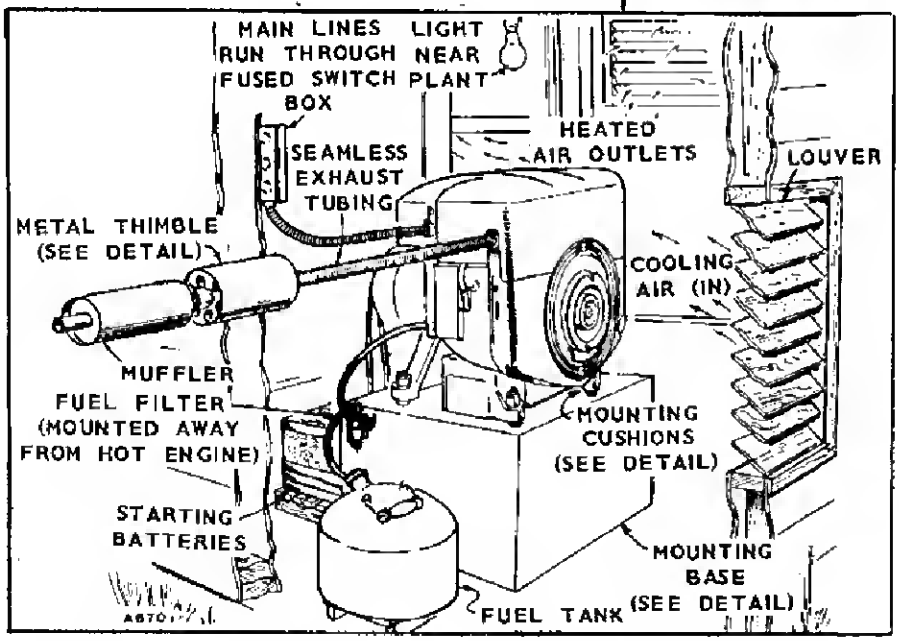
EXHAUST LINE PASSING THROUGH WALL OR PARTITION

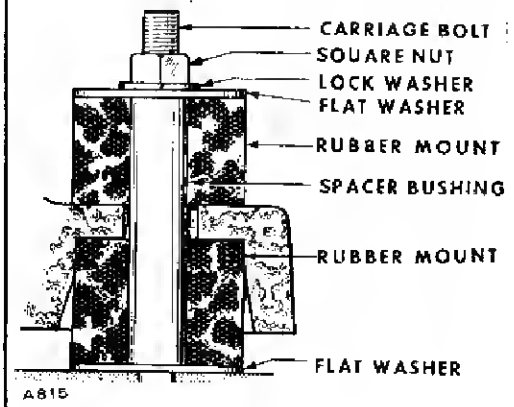


DRAIN CONDENSATION TRAP PERIODICALLY

AVOID SHARP BENDS







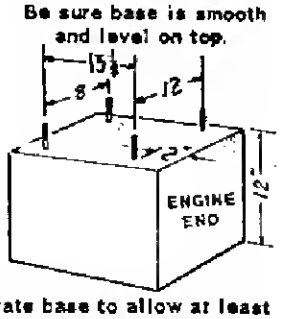


FIG. I-1

COOLING AIR

Pressure cooled plants require an air inlet opening and an air outlet of 5 sq. ft. Position the outlet opening above and to the rear of the plant, the inlet opening just opposite the blowerhousing.

VACU-FLO COOLING

Air flow through Vacu-Flo units is reversed. Provide an air inlet of at least 1- sq. ft. Duct the heated air outside. An optional automatic air shutter and air duct is available for use in cold weather.

EXHAUST

Vent exhaust gases outside — EXHAUST GASES ARE DEADLY POISONOUS! Use flexible tubing between the plant exhaust outlet and rigid piping. Shield the line if it passes through a combustible wall or partition. If turns are necessary, use long sweeping type elbows. Use one pipe size larger for each 10-ft. in length. Position the exhaust outlet away from the plant air intake.

LOCATION

Provide a protected location that is dry, dust-free, and preferably heated in cold weather. For service convenience, provide at least 24" clearance around plant.

OIL DRAIN

For convenience in draining oil, remove the oil drain plug and install an extension pipe and coupling. Oil base has 3/8" pipe tapped hole.

MOBILE INSTALLATIONS

Bolt the plant in place using the mounting cushions. Provide proper ventilation, cooling, service accessibility, etc. Protect against road dust, vibration, and road shock. Follow the principles of installation for a permanent installation. Do not connect to truck engine fuel supply line, provide a separate fuel line to fuel tank. Do not exceed 4 ft. lift from tank bottom to fuel pump. See Onan Technical Bulletin T-012, Mobile Installations for further information.

INSTALLATION

GENERAL

Important installation points are: sufficient cooling, exhaust gas discharge, electrical and fuel connections, location and mounting, and protection from road dust and shocks during transit (mobile applications).

Each installation must be considered individually – use these instructions as a general guide. Always check local building codes, fire ordinances, etc., for compliance. Provide a location that is protected from the weather, dry, dust free, and preferably warm in cold weather. The air discharge side of plant requires only 3" clearance from wall to permit plant to rock on its mounts, but at least 24" clearance is required around all other sides for service accessibility.

MOUNTING (See Fig.1-1)

Permanent installations need a sturdy, level, mounting base of concrete, heavy wood or structural steel at least 12" high to aid oil changing and operating. For mobile applications (trucks or trailers) install slide-out rails or some other means (such as doors) to provide service space. (See Fig. 1-3).

Carefully assemble the mounting cushions, washers and spacer bushing (Fig.1-1). The spacer bushing prevents compression of the snubber (upper rubber cushion). Space the 3/8" mounting bolts as shown in Fig. 1-1

VENTILATION AND COOLING

Air circulation is needed to dissipate heat produced by the engine and generator in normal operation. *Outdoor* installations can rely on natural circulation, but *mobile, indoor or housed* installations need proper size and positioned vents for required air flow. See specifications for the air requirements at 1800 rpm.

Vent sizes depend on variable conditions: (1) size of enclosure, (2) ambient temperature, (3) electrical load, (4) running time, (5) restrictions imposed by screens, louvers, shutters, or filters, (6) prevailing wind direction. *Remember that a required volume of air must reach the unit, absorb the heat, and be discharged away from the installation.* Pressure cooled units need an inlet vent with an unrestricted opening of at least 5 sq. ft. for variables. For discharged air, install separate duct from the engine.

1. *The engine discharge duct* must be the same size as the inlet vent. If a screen is used in the duct, increase the duct size in proportion to the restriction. Consider installing the screen diagonally to limit the restriction and increase duct size for runs over 9-feet. If bends are necessary, use larger radius elbows. Use a canvas section at the plant to absorb vibration (Fig. 1-1). To minimize vapor lock, pitch the duct upward (toward the outlet) so heat can escape when unit is shut down.

Vacu-Flo Cooling Inlet Vent (see specifications for air flow). should be at least 1 sq. ft., the duct for discharged air should be at least as large as the scroll outlet.

Auxiliary fans can be used to increase air flow to units installed in small, poorly ventilated, rooms. The fan size and location should be such that the air inlet to the engine

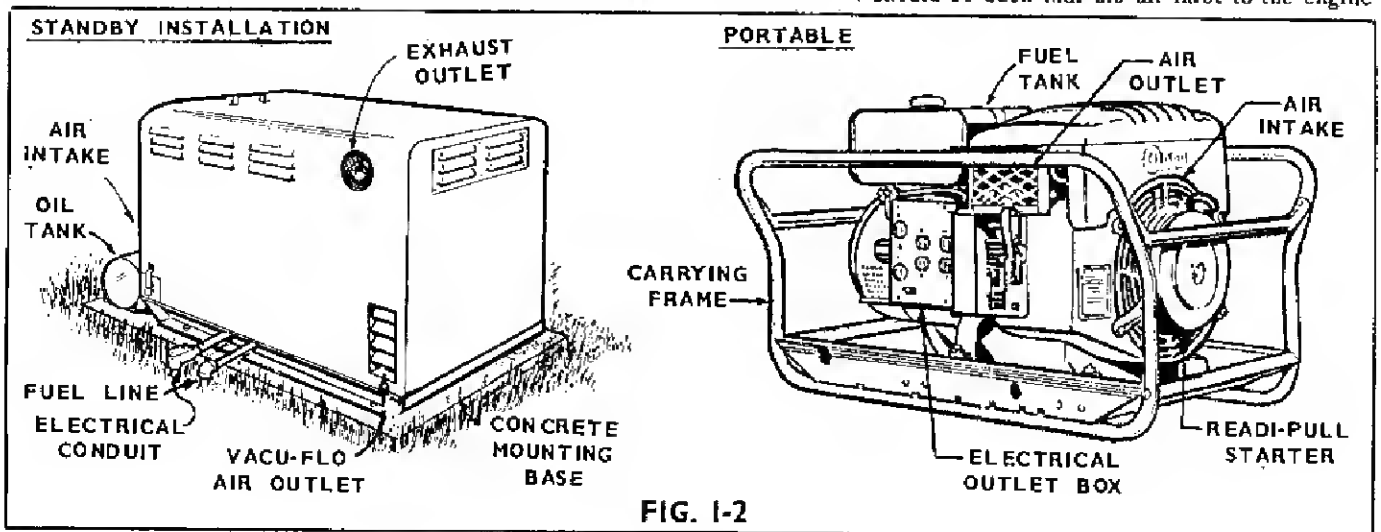


FIG. 1-2

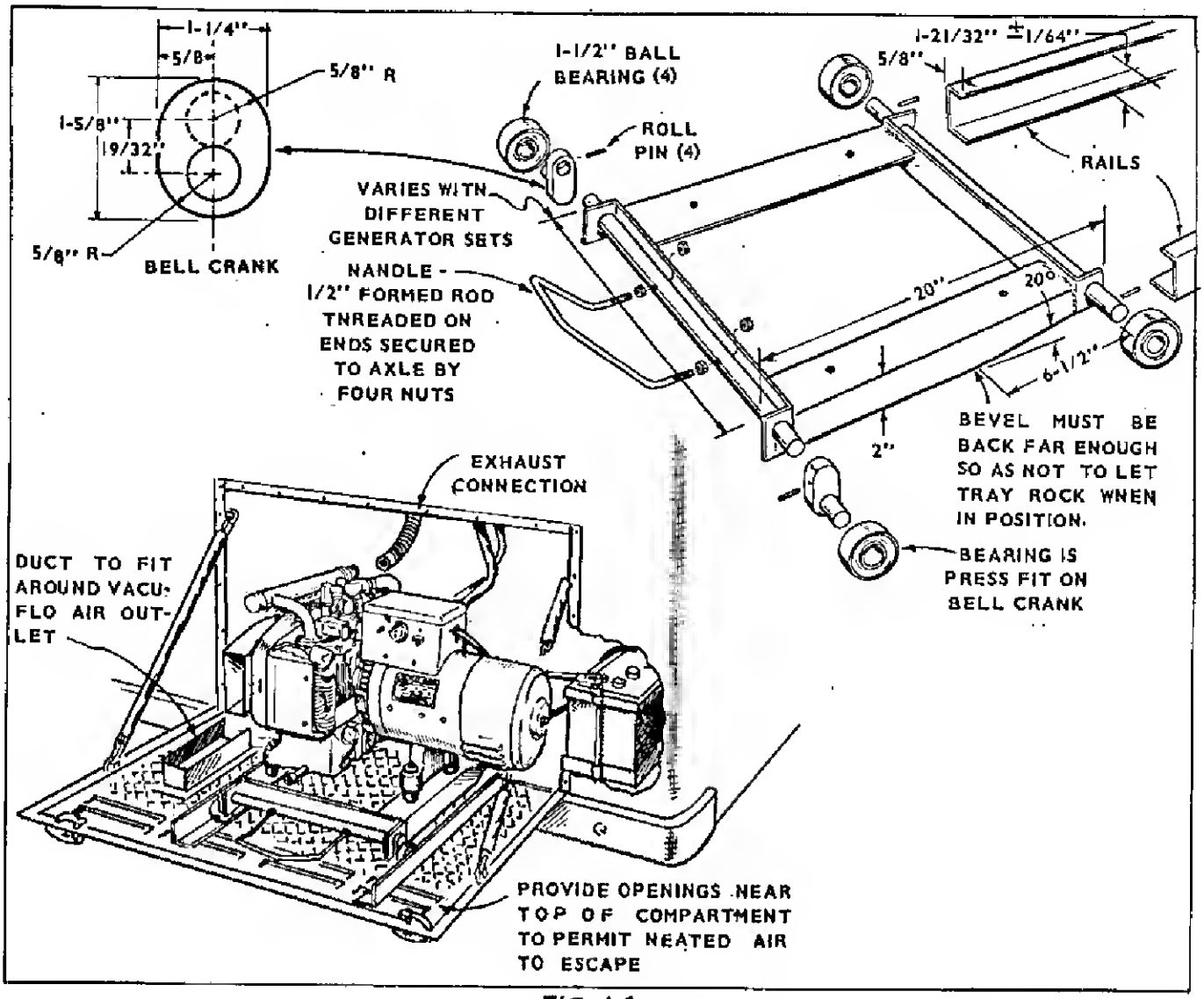


FIG. 1-3

doesn't exceed 120°F when running at full rated load.

Thermostatically controlled shutters can be used to speed warm up after starting and keep cold air out during shut-down. When the discharged air reaches 120°F, shutters begin to open; at 140°F, the shutters are completely open. Air shutters are equipped with a high temperature cut-off switch that stops the plant if duct temperature reaches 240°F ± 6°. The unit cannot be re-started until the switch temperature drops to 195°F ± 8°.

GASOLINE TANK

If a separate fuel tank is used, install the tank so the bottom is less than 4-feet below the fuel pump. The tank top must be below fuel pump level to prevent siphoning. Install a shut-off valve at the tank. When the fuel tank is shared with another engine, use a separate fuel line for each to avoid starving the plant.

If fuel lift *must exceed 4-feet,* install an auxiliary electric fuel pump at the fuel supply. Wire it in parallel with the ignition coil (ahead of resistor). If an auxiliary reservoir fuel tank is used for a *standby* installation, note that fuel line connections must be changed (Fig. 1-5).

FUEL CONNECTION

For gasoline plants, connect the fuel line to the fuel pump inlet. Pump is threaded 1/8-27 NPTF (American Standard Internal Tapered Pipe Thread). **Important:** *Connect the plant to the fuel source with a flexible line to avoid line failure due to vibration.*

For gaseous plants (see Fig. 1-4) check with the local fuel supplier for gas regulations and line pressure. Provide a manual gas valve. A filter in the line may be necessary. Electric solenoid shut-off valves in the supply line are usually required for indoor automatic or remote starting installations. Connect solenoid wires to battery ignition circuit (Fig. 1-4) to open valve during running. Install a demand type gas regulator according to instructions and position it near the plant to aid starting (regulator line pressure must be within 2 to 8 oz.).

Important: *Always use flexible tubing between engine and the gas demand regulator.*

GROUNDING

To prevent shock hazard, ground the plant. For permanent installations, connect a #8 or larger wire between:

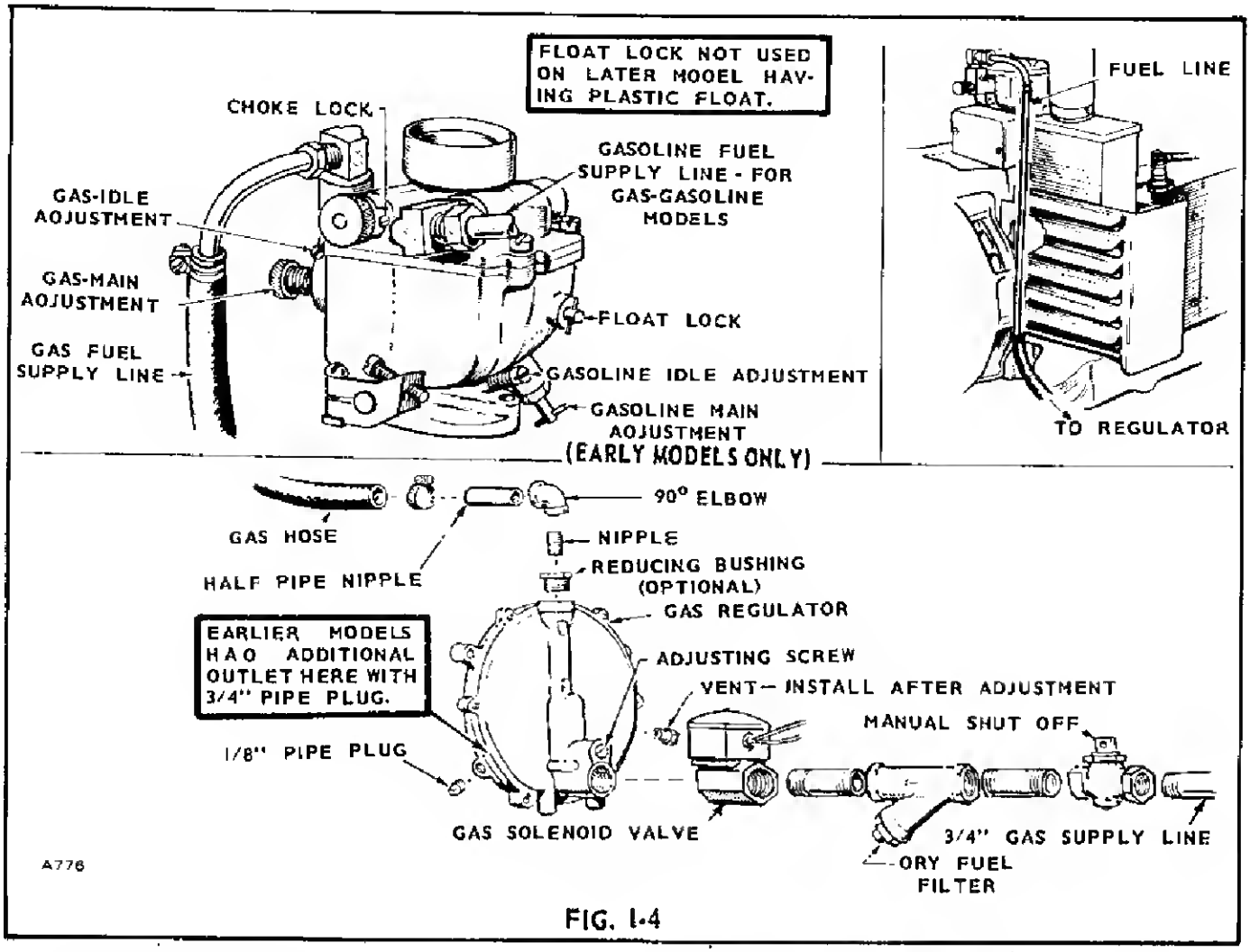


FIG. 1-4

(1) a separate ground pipe or rod penetrating into moist earth,

(2) and the solderless connector located on the generator (on models not so equipped, to the battery ground stud on the engine).

REMOTE START-STOP SWITCH (OPTIONAL)

For remote control starting and stopping, use 3-wires to connect the remote switch (SPDT, momentary contact, center-off type) to the terminal block marked B+, 1, 2, 3, in the plant control box using wire sizes as listed in Fig. 1-6.

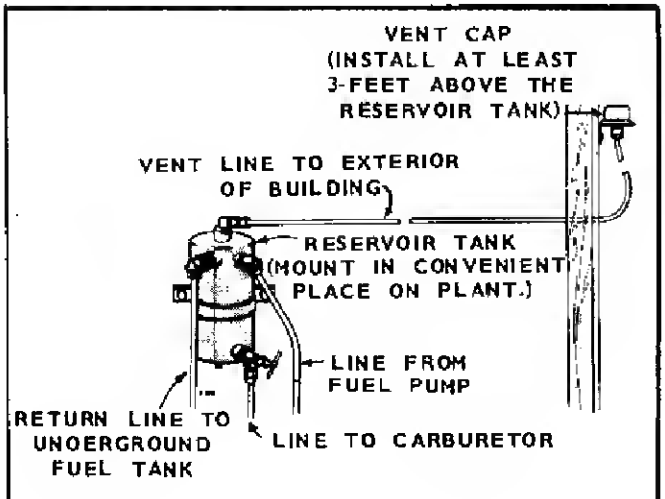
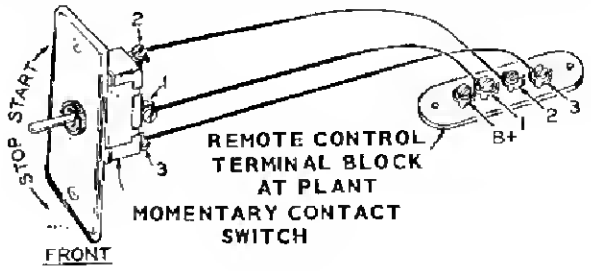


FIG. 1-5

START AND IGNITION SWITCHES (MAGNET SERVICE PLANTS)

Separate ignition toggle and start push button switches are supplied. These switches can be mounted at any convenient point where the operator will be able to know when the plant starts. Accidental closing of the start switch while the plant is running may damage the starter. Refer to Fig.



WIRE SIZE	DISTANCE
#18	to 250 ft.
#16	to 400 ft.
#14	to 630 ft.

FIG. 1-6

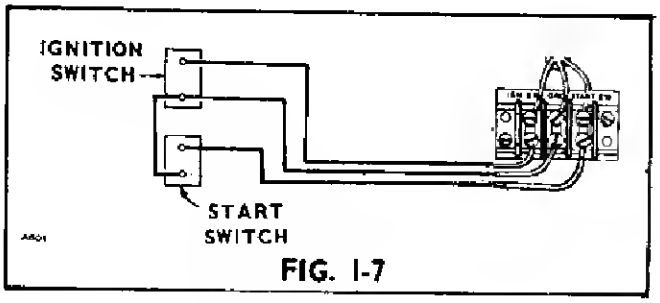


FIG. 1-7

1-7 for installation connections.

BATTERY CONNECTION

Plant with Starting Motor: (Magnet Service Plants) See Specifications for minimum 12-volt battery requirements. Connect battery positive (+) to starter engaging solenoid terminal post, Fig. 1-8. Connect battery negative (–) to a good ground on the engine.

BATTERY CONNECTION

Exciter Cranked Plant: Refer to wiring diagram and Fig. 1-9. If battery ground must be changed, reverse the connections to the charge ammeter or re-mark the correct direction of charge. Crank electrically to flash field.

Provide two 6-volt batteries connected in series (one battery's negative to other battery's positive) for a 12-volt source. See Specifications for minimum battery requirements. Connect the remaining battery positive (+) to the start solenoid (located in the control box). Connect the battery negative (–) to a good ground on the generator.

LOAD WIRE CONNECTIONS

Plant nameplate shows the electrical output rating of the plant in watts, volts, and cycles. The plant wiring diagram shows the electrical circuits and connections necessary for the available output voltage. Also see Fig. 1-10 thru 1-13.

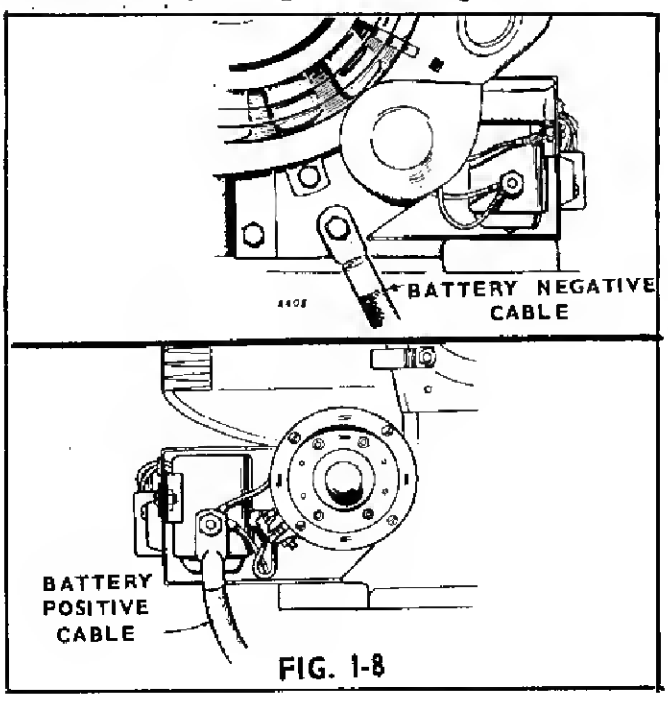
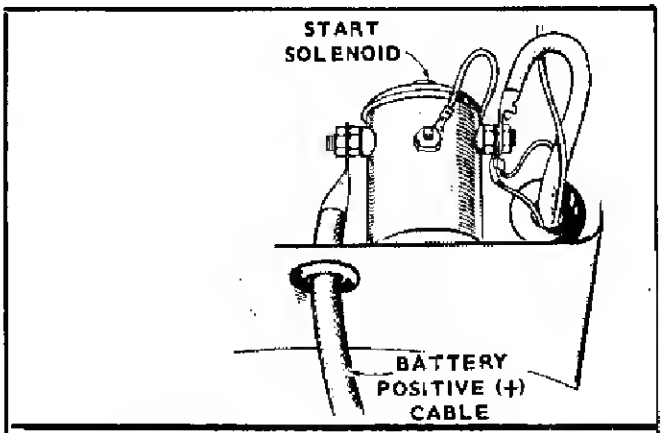


FIG. 1-8



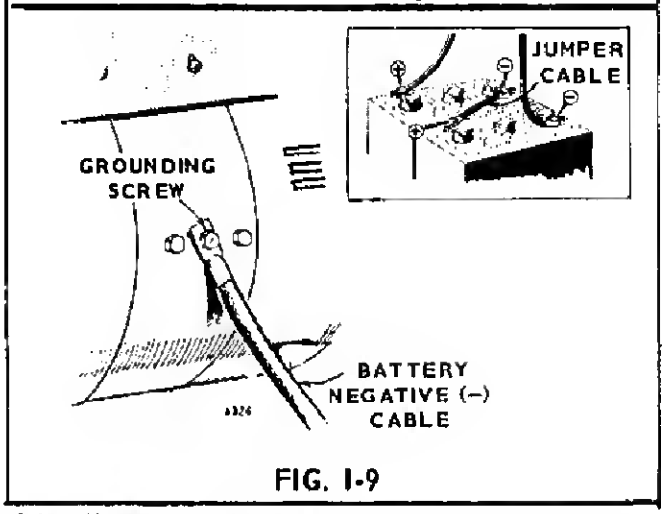


FIG. 1-9

Meet all applicable electrical code requirements. Work should be done by a qualified serviceman or electrician because the installation will be inspected and approved.

The plant control box (junction box) has knock out sections to accommodate load wires. Use flexible conduit and stranded load wires near the plant to absorb vibration. Use sufficiently large insulated wires. Strip insulation from wire ends as necessary for clean connections. Connect each load wire to the proper generator output lead or terminal lug inside the plant box. Insulate bare ends of ungrounded wires. Use a bolt (through the control box) to connect the grounded (⏚) generator lead and load wire. Install a fused main switch (or circuit breaker) between the generating plant and load. If a test-run indicates wrong rotation of 3-phase motors in the load circuit, switch the connections at any two generator terminals.

Standby: If the installation is for standby service, install a double-throw transfer switch (either manual or automatic) to prevent feeding generator output into the normal power source lines and to also prevent commercial power and generator output from being connected *to the load at the same time.* Instructions for connecting an automatic load transfer switch are included with such equipment.

Balancing the Load: Current for any one output lead must not exceed nameplate rating. Serious overloading can damage the generator windings. When two or more single phase circuits are available, divide the load equally between

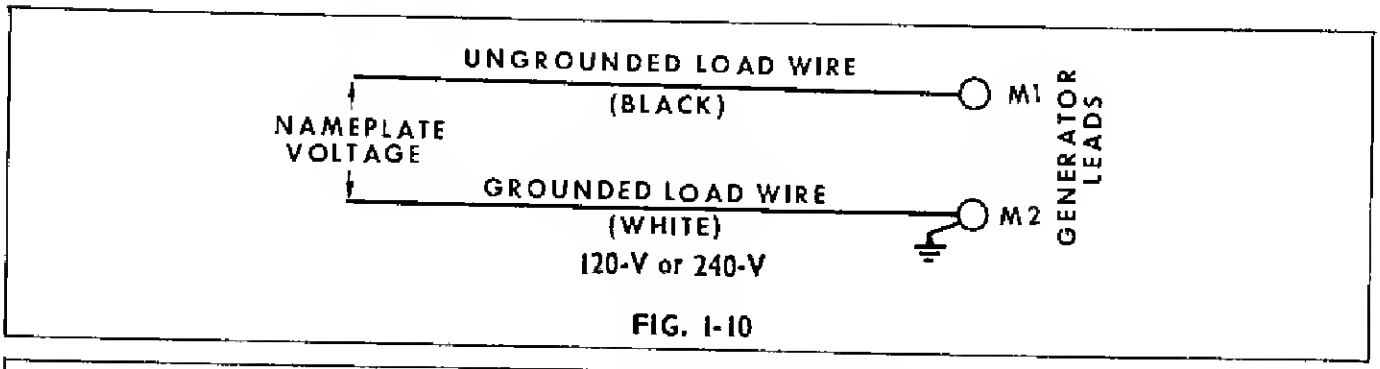


FIG. 1-10

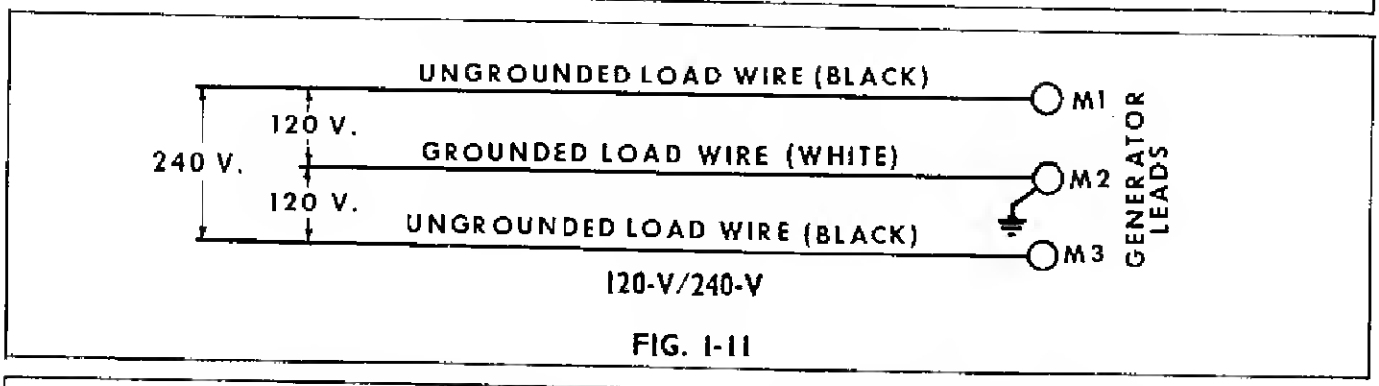


FIG. 1-11

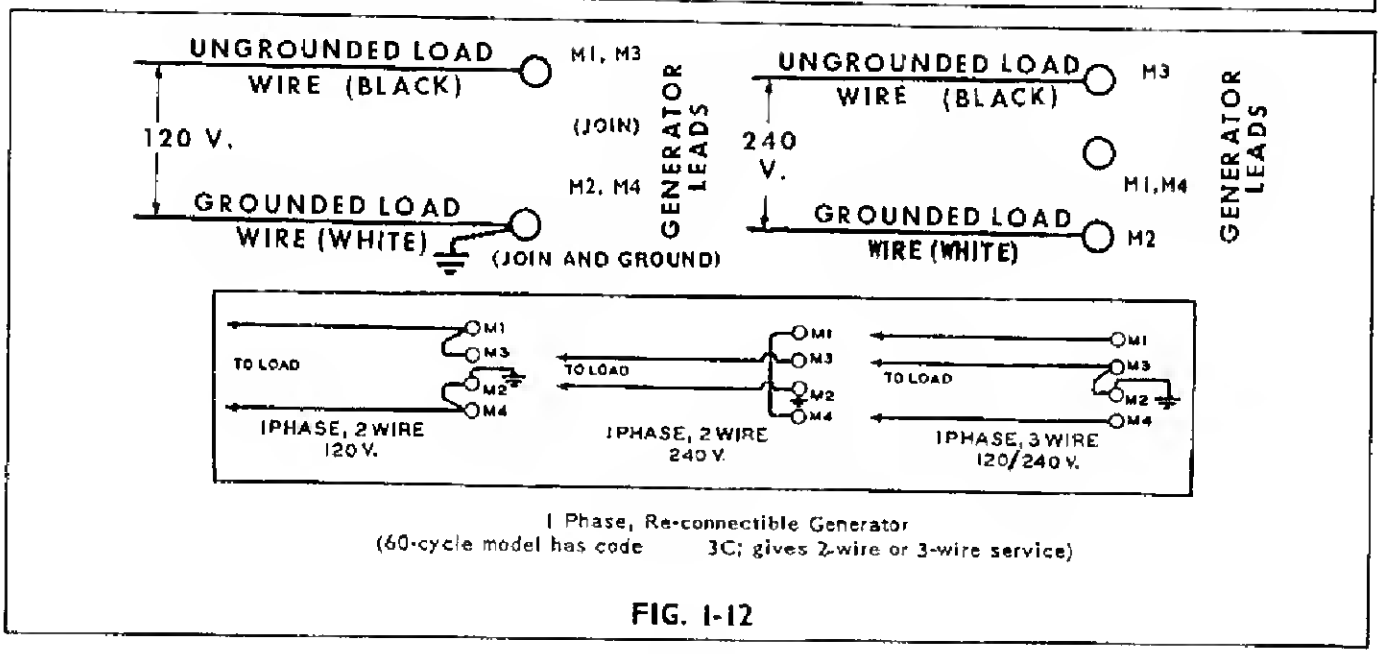


FIG. 1-12

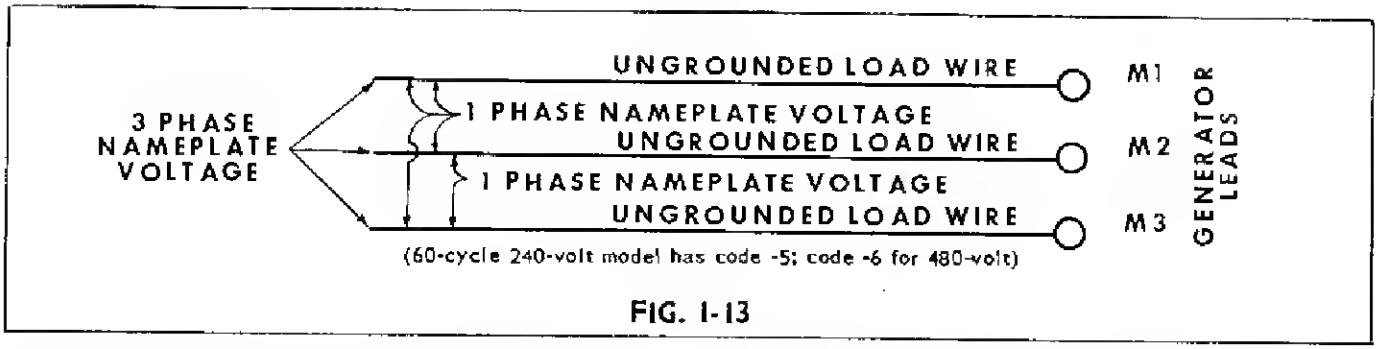


FIG. 1-13

them. To determine the amount of current available on each single phase circuit, subtract the higher voltage load or 3-phase load (whichever applies) from the rated output and divide the remainder by the quantity of single phase circuits. *EXAMPLE:* On a 5,000-watt, 3-phase, 4-wire plant, if 2,000-watts of 3-phase is used....a remainder of 3,000-watts is available to be equally divided between the three single phase circuits.

Output Lead Markings: Revolving armature generator leads are marked M1, M2, etc. These identifying marks also appear on the wiring diagram.

Voltage Selection on Reconnectible Single Phase Generators: Models 4CCK-3CR and 5CCK-3CR are reconnectible for use as 120/240-volt 3-wire, 120-volt 2-wire, or 240-volt 2-wire, or 240-volt 3-wire power source (Fig. 1-12). Use the con-

nection for two wire service when one load exceeds 1/2 the rated capacity. Balance the load when connected for three-wire service.

Load Connections: Refer to the figure which illustrates the load connection for the output shown on your plant's nameplate. See switchboard instructions here when a switchboard is used.

Load Connections: (Magnet Service) The magnet service plant, has generator leads marked A1, F2, and A2 extending into the outlet box. Connect the voltage control rheostat between leads F2 and A2. Connect the magnet (load) wires to generator leads A1 and A2.

Switchboard: When an optional wall mounted switchboard containing ammeters, voltmeters, circuit breakers, is used, these load wire connections apply: Connect to the unused terminal of each ammeter, one ungrounded (hot) generator lead. Connect to the ground stud in the switchboard, generator leads and load wires which are to be grounded - if any. Connect to the unused terminal of each circuit breaker, one ungrounded (hot) load wire. On plants which generate more than one voltage, the voltmeter reads the higher voltage shown on the nameplate. The lower voltage is correct when the higher voltage is correct.

OPERATION

INITIAL START

Check the engine to make sure it has been filled with oil and fuel. If engine fails to start at first attempt, inhibitor oil used at the factory may have fouled the spark plugs – remove, clean in gasoline, dry thoroughly and install. Heavy exhaust smoke when the engine is first started is normal and is caused by the inhibitor oil.

Crankcase Oil: Use a good-quality detergent oil that meets the API (American Petroleum Institute) service designations MS, MS/DG. Recommended SAE oil numbers for expected ambient temperatures are as follows:

Above 30°F	SAE 30
0°F to 30°F	SAE 10W
Below 0°F	SAE 5W-20

Do not use service DS oil. Do not mix brands or grades. Refer to Maintenance Section for recommended oil changes and complete lubricating oil recommendations.

Recommended Fuel: Use clean, fresh, *regular* grade, automotive gasoline. *Do not* use highly leaded *premium* types. Never fill the tank when the engine is running and leave some fuel expansion space. Open fuel line valve (when used).

ELECTRIC STARTING

Remote Control, AC Plant: Push the *start-stop* switch to its *start* position. Release the switch as soon as the plant starts.

Magnet Service Plant: Set the *ignition* switch to its on position. Push the *start* switch to crank the engine.

Release the start switch as soon as the plant starts.

MANUAL STARTING

Manual or Portable Plants: Adjust the manual carburetor choke as necessary for the temperature conditions. Pull the start rope with a fast, steady pull to crank the engine. Do not jerk. As the plant warms up, adjust the choke gradually to its fully open position.

Remote Control, AC Plant: If the battery charge condition is too low to crank the engine, but is sufficient to supply ignition current, the plant can be started manually. Set the control box switch to its *manual* start position. Pull the rope with a fast, steady pull to crank the engine. Do not jerk. After starting, return the control box switch to the *electric start* position, to avoid discharging the battery.

APPLYING LOAD

If practicable, allow plant to warm up before connecting a heavy load. Continuous generator overloading may cause high operating temperatures that can damage the windings. Keep the load within nameplate rating.

RHEOSTAT CONTROL, MAGNET SERVICE

Be sure the field rheostat is turned to its maximum resistance position (minimum generator voltage) before starting the plant. After connecting the magnet by operating the magnet controller, adjust the rheostat to give a generator voltage of 250-volts, or to the rated voltage of the magnet. When first connected, the magnet resistance is comparatively low, so more rheostat resistance is needed to keep the voltage at the proper value. As the magnet warms up in use, the rheostat must be re-adjusted to bring the voltage up to normal.

BATTERY CHARGING

The battery charge rate is automatically controlled by a voltage regulator. On AC plants, the high charge rate was set at the factory for average operating conditions. If frequent starts and short operating periods require an increased high charge rate, adjust by moving the slide clip on the adjustable resistor in the control box. On plants with a separate charging generator, failure of charge current could be due to a blown fuse in the voltage regulator.

DUAL PURPOSE PLANT:

The charging rate to the battery is controlled by a *Hi-Lo* charge switch located near the ammeter on the plant control box. When this switch is at the *Hi* position, the charging rate is about 20 amperes. When the switch is at the *Lo* position, the charging rate is about 3 amperes.

The total ac load on the dual purpose plant should not exceed 2250-watts when the charge switch is at the *Hi* position. When the charge switch is at the *Lo* position, the full ac capacity of 3,000-watts can be used.

The plant produces alternating current (ac) as well as direct

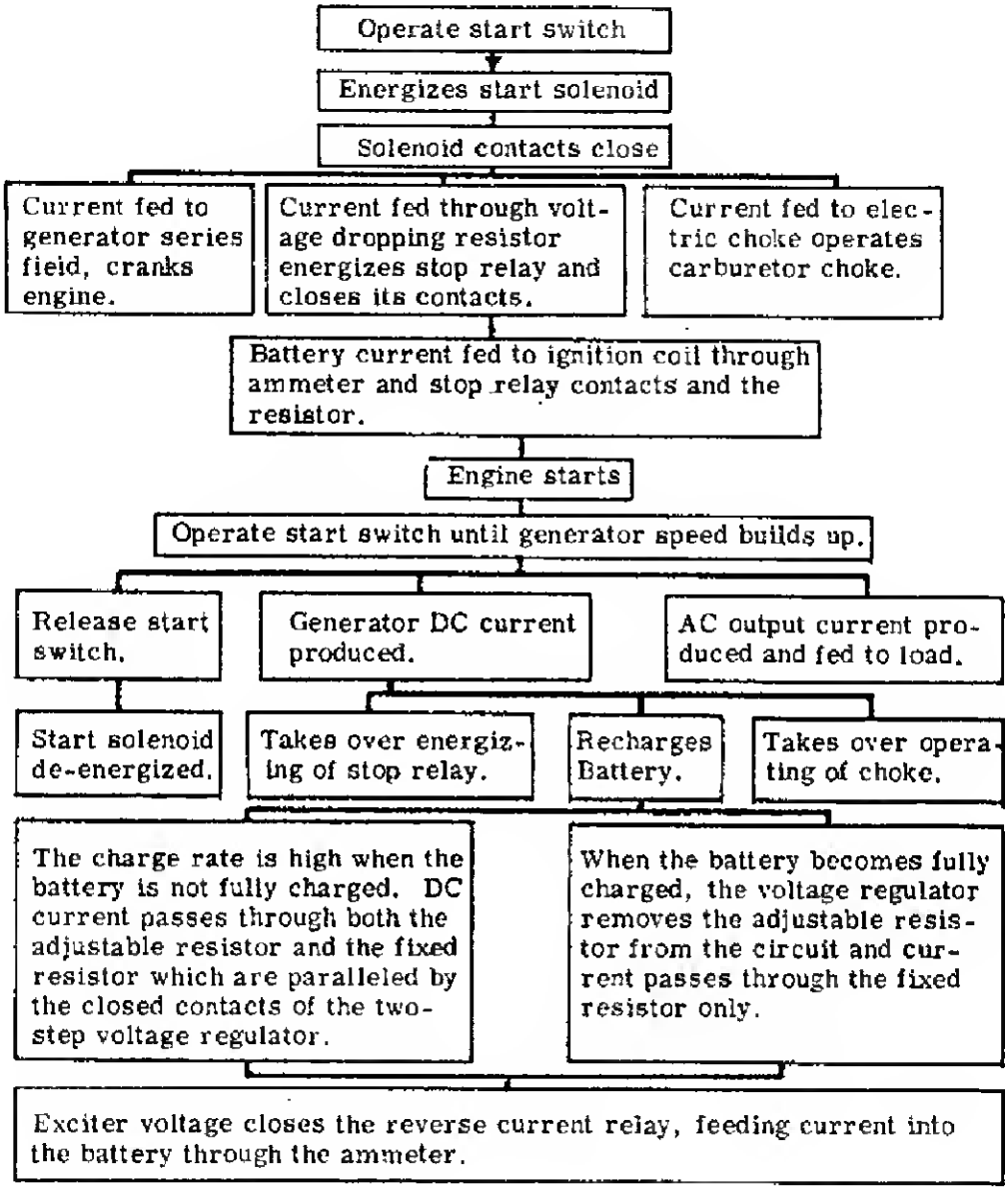


FIG. 2-I

current (dc) and must operate at about 1800 rpm (for 60 cycle plants) in order to produce the correct frequency. *Never increase engine speed to increase the charging rate.* Engine speed should be adjusted only as necessary to obtain the correct ac output frequency.

GAS-GASOLINE CONVERSION

Engines having a combination gas-gasoline carburetor can be switched to gasoline operation by the following procedure: (1) Close the manual fuel shut-off valve in supply line for natural gas or Propane-Butane vapor, wherever located; (2) Open the gasoline fuel shut-off valve, wherever located; (3) Unscrew the carburetor float lock (early models only) all the way outward to backseat (necessary to prevent leakage); (4) Set the spark plug gap as given in the Table of Clearances; (5) See that the choke is free and works easily (be sure to release choke lock on plants with electric choke); (6) Start the engine in the manner described for the engine. If the engine runs unevenly under half or full load, due to faulty carburetor adjustment, the main jet needs adjusting. This is not the same main adjusting screw used for gaseous fuel. Another adjusting screw is provided for this purpose (refer to Adjustment Section).

To change back to natural or Propane-Butane operation, reverse the above procedure and reset the spark plug gap.

PLANT EXERCISE

Infrequent use results in hard starting. Operate plant one

30-minute period each week. Run longer if battery needs charging.

EMERGENCY OPERATION IF BATTERY FAILS

The remote-type revolving-armature plant needs a battery for electric choke and ignition. If the battery fails completely and the plant must be operated during an emergency, a battery can be shared with other equipment provided the plant charging circuit is disconnected as follows: Remove the wire which connects to the battery terminal on the reverse current relay from the ammeter and tape the bare end. With this lead disconnected, the plant will not recharge battery.

BREAK-IN PROCEDURE

No matter how carefully engine parts are manufactured or expertly assembled, there are always microscopic variations in fit between metal parts such as pistons, rings, main and connecting rod bearings.

Break-in or ideal fitting of all internal moving metal parts can best be achieved by maintaining proper cooling and correct lubrication during the running-in period. *Break-in* can take as little as ten operating hours or it may take many hundreds of hours. Extended periods of very heavy engine loading (above rated horsepower or electrical output) during this initial service period can cause severe cylinder scoring or bearing galling. On the other hand extended periods of very light loading during initial break-in may cause cylinder wall glazing and/or poor piston ring seating. Engine parts damage can also be caused by using the wrong type and viscosity oil and high engine operating temperatures during break-in.

All engines use more oil than normal during the first hours of operation. As internal moving parts are run-in by controlled operation, oil consumption should gradually decrease until the rate of consumption is stabilized. It is extremely rare that oil consumption drops to zero. All engines use some oil even when in perfect condition and properly broken-in. Oil consumption varies according to engine design, engine (piston) speed, size of engine, type of oil, oil viscosity, length of operating periods, operating temperatures, engine loading, etc. As engine operation is continued, clearance between moving parts increase slightly due to normal wear of piston rings, cylinder walls, valve guides, oil seals, etc. These clearances increase until oil consumption is excessive and engine parts have to be replaced and/or refitted. This usually takes thousands of hours.

Each Onan engine is *run-in* at the Onan factory for a minimum of three hours. This is not enough running time to completely *break-in* the engine. Proper completion of the *break-in* period is up to the customer.

Generator sets manufactured by Onan can be loaded to full nameplate rated output (not until they *bog down*) as soon as they are put into operation although it is recommended during these first few hours of operation that generator sets be loaded to 80% of rated capacity. Initial heavy loading helps seat piston rings and brings oil consumption to normal in in the shortest time.

During *break-in* check oil level at least every eight (8) operational hours. Add oil if the level is at *low* on the dipstick. Never over-fill. This may cause oil to foam and enter the breather system.

Drain the initial oil fill after 50-hours of operation while the engine is hot.

Controlled *break-in* with consistent use of proper oil from a reputable supplier and a conscientiously applied maintenance program will help assure satisfactory service for thousands of hours from your Onan electric plant.

OUT-OF-SERVICE PROTECTION

Protect a plant that is to be out-of-service for more than 30 days as follows:

1. Run plant until thoroughly warm.
2. Turn off fuel supply and run until plant stops.
3. Drain oil from oil base while still warm. Refill and attach a warning tag stating oil viscosity used.
4. Remove each spark plug. Pour 1 oz. (two tablespoons) of rust inhibitor (or SAE #50 oil) into each cylinder. Crank engine slowly (by hand) several times. Install spark plugs.
5. Service air cleaner.
6. Clean governor linkage and protect by wrapping with a clean cloth.
7. Plug exhaust outlet to prevent entrance of moisture, dirt, bugs, etc.
8. Wipe generator brushes, slip rings, etc. Do not apply lubricant or preservative.
9. Wipe entire unit. Coat rustable parts with a light film of grease or oil.
10. Provide a suitable cover for the entire unit.
11. If battery is used, disconnect and follow standard battery storage procedure.

HIGH TEMPERATURES

1. See that nothing obstructs air flow to-and-from the plant.
2. Keep cooling fins clean. Air housing should be properly installed and undamaged.
3. Keep ignition timing properly adjusted.

LOW TEMPERATURES

1. Use correct SAE No. oil for temperature conditions. Change oil only when engine is warm. If an unexpected temperature drop causes an emergency, move the plant to a warm location or apply heat externally until oil flows freely.
2. Use fresh (not *premium*) gasoline. Protect against moisture condensation. Below 0°F adjust carburetor main jet for slightly richer fuel mixture.
3. Keep ignition system clean, properly adjusted, and batteries in a well charged condition.
4. Partially restrict cool air flow but use care to avoid overheating.

DUST AND DIRT

1. Keep plant clean. Keep cooling surfaces clean.
2. Service air cleaner as frequently as necessary.
3. Change crankcase oil every 50 operating hours.
4. Keep oil and gasoline in dust-tight containers.
5. Keep governor linkage clean.
6. Clean generator brushes, slip rings, and commutator - do not remove normal (dark brown) file. Do not polish.

HIGH ALTITUDE

For operation at altitudes of 2500-feet above sea level, close carburetor main jet adjustment slightly to maintain proper air-to-fuel ratio (refer to the *Adjustments Section*). Maximum power will be reduced approximately 4% for each 1000-feet above sea level, after the first 1000-feet.

ADJUSTMENTS

CHECK BREAKER POINTS

Refer to Maintenance Schedule for correct gap distances. Replace burned or faulty points. If only slightly burned, dress smooth with file or fine stone. Measure gap with thickness gage, gap points at .020".

Ignition breaker points, Fig. 3-1 must be correctly gapped. Crank engine to fully open breaker points (1/4 turn after top center). Loosen and move stationary contact to correct the gap at full point separation. Secure points and check for correct gap.

Ignition points should break contact just when the timing mark aligns with the flywheel timing mark (19° for 1500 to 2400 rpm, 25° for 2500 rpm plants). Final timing is corrected by properly shifting the breaker point box on its mounting and using a timing light. If specified timing cannot be obtained by positioning the breaker box, check to be sure the timing marks on gears are aligned. Timing procedures appear in separate service manual.

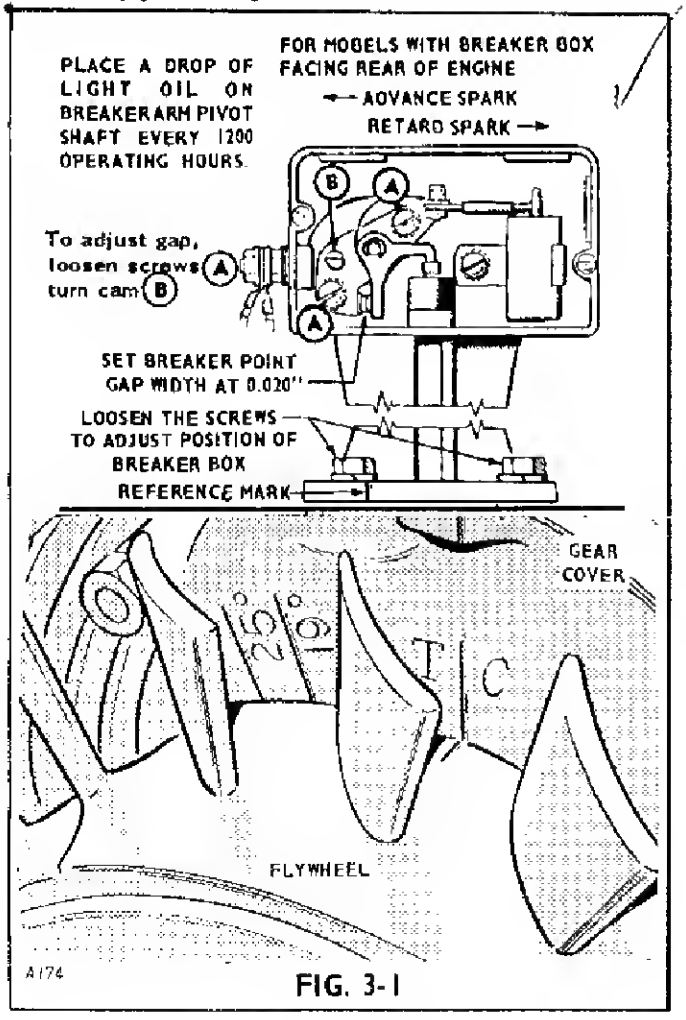


FIG. 3-1

CARBURETOR

The carburetor has an adjustable idling jet. It is simple in construction and normally requires little attention other than a periodic cleaning. If the engine runs unevenly at half or full load due to faulty carburetion, the main adjusting needle (early models only) needs adjusting. Make the adjustment while the engine is running at normal operating temperature and with almost a full load connected to the engine.

Turn the main adjusting needle (early models only) out about two full turns. Then turn it slowly in until the engine begins to lose power and speed. Then turn it out very slowly until

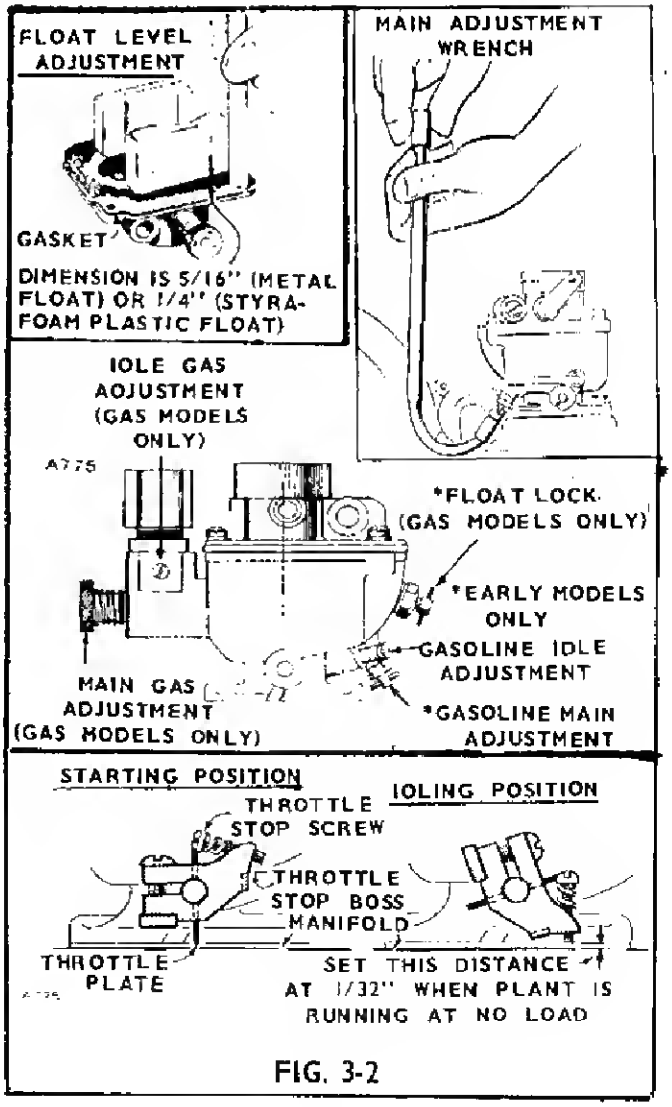


FIG. 3-2

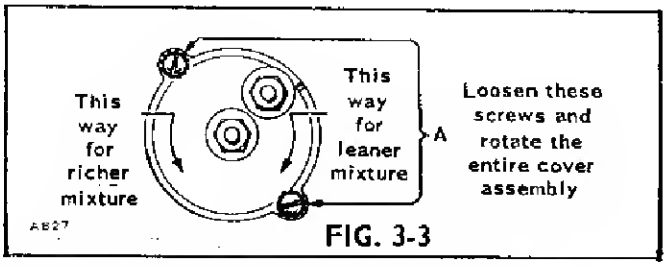


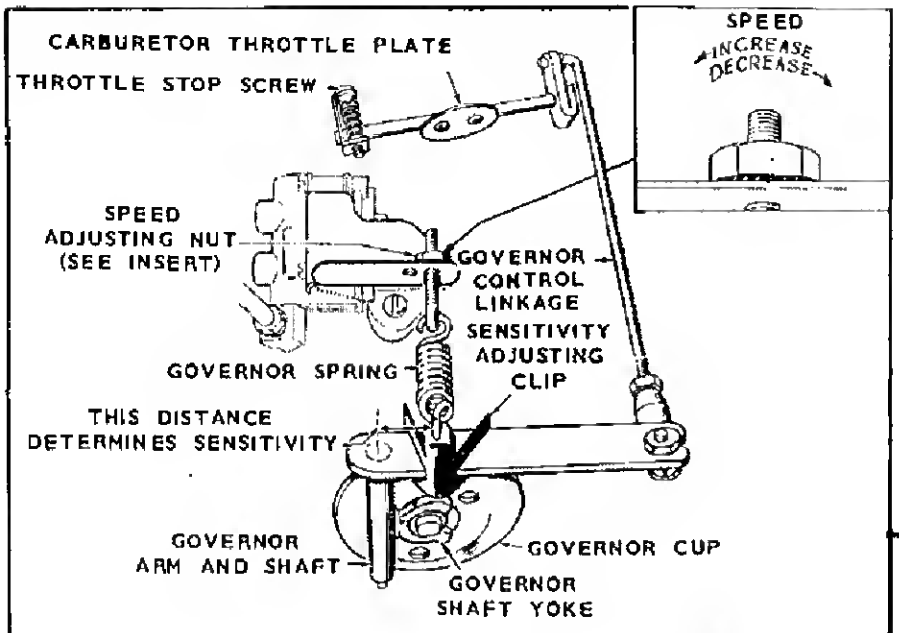
FIG. 3-3

the engine runs smoothly at full power and speed. Onan carburetor wrench (420B169) can be purchased from your Onan dealer for easier adjustment of the carburetor engine adjusting needle.

When adjusting the idle jet needle, the engine should be running at normal operating temperature and without a load connected. Turn the idle adjusting needle in until the engine loses considerable speed. Then turn it out until the engine runs smoothly. A hunting condition at no load can sometimes be corrected by an idle adjustment.

To adjust the carburetor float level, bend the float near the shaft as needed to obtain the correct level.

If the engine develops a hunting condition (alternate increase and decrease of engine speed) try correcting by opening the main adjusting needle (early models only) a little more. Do not open more than 1/2 turn beyond the maximum point of power. If this does not correct the condition, the sensitivity adjustment of the governor should be adjusted.



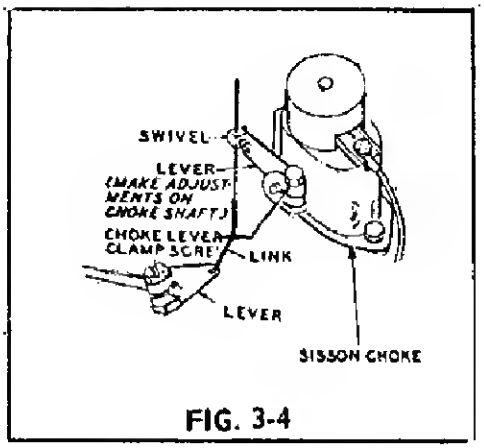
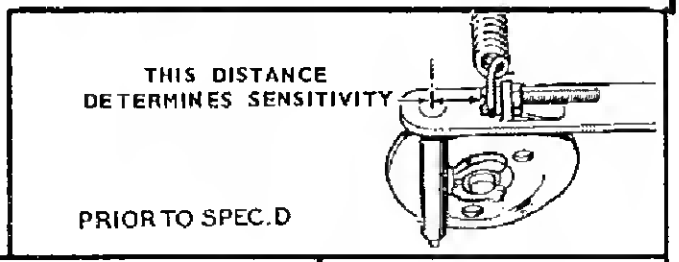


FIG. 3-4



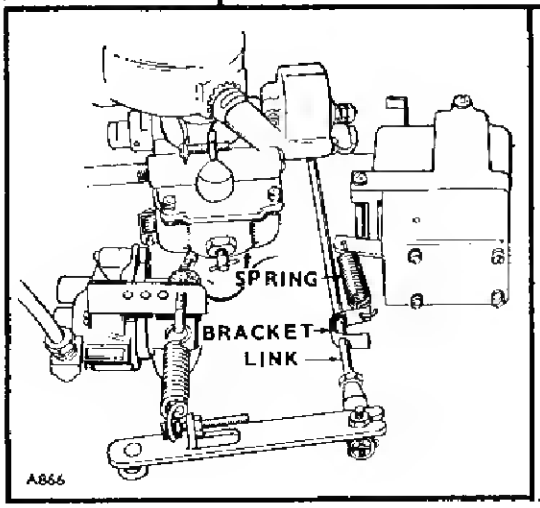
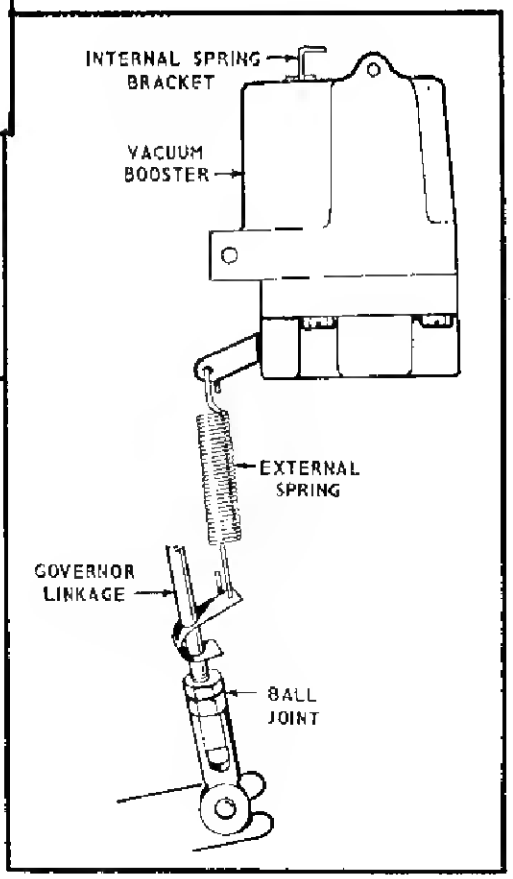


FIG. 3-5



Gas Fuel: When operating on gas fuel, follow the procedure given for gasoline fuel, using the gas fuel adjusting screws. Always be sure the carburetor choke is locked in its wide open position.

ELECTRIC CHOKE

If extremes in starting temperatures require a re-adjustment of the choke, loosen slightly the two cover retaining screws. For less choking action, turn the cover assembly a few degrees in a clockwise direction. For more choking action, turn counterclockwise. Retighten the cover screws.

SISSION CHOKE

This choke should not require any seasonal re-adjustment. If adjustment becomes necessary, pull choke lever up and insert a 1/16" diameter rod through shaft hole (opposite end from lever) and engage rod in notch of mounting flange, to lock shaft in place.

Loosen choke lever clamp screw. With air inlet removed, adjust choke lever so carburetor choke plate is completely closed, or not more than 5/16" open. Tighten choke lever clamp screw and remove locking rod from shaft.

GOVERNOR AND BOOSTER

The governor and booster control the speed of the engine. A speed adjustment includes adjusting both devices (Fig. 3-5).

GOVERNOR

Before making final governor adjustments, run the plant about 15-minutes under light load to reach normal operating temperature. (If governor is completely out of adjustment, make a preliminary adjustment at no load to first attain a safe voltage operating range).

On ac generating plants, engine speed determines the output voltage and current frequency of the generator. By increasing the engine speed, generator voltage and frequency are increased, and by decreasing the engine speed, generator voltage and frequency are decreased. An accurate voltmeter or frequency meter (preferable both) should be connected to the generator output in order to correctly adjust the governor of the ac plant. A small speed drop not noticeable without instruments will result in an objectionable voltage drop. The engine speed can be checked with a tachometer.

A binding in the bearings of the governor shaft, in the ball joint, or in the carburetor throttle assembly will cause erratic governor action or alternate increase and decrease in speed (hunting). A lean carburetor adjustment may also cause hunting. Springs of all kinds have a tendency to lose their calibrated tension through fatigue after long usage. If all governor and carburetor adjustments are properly made, and the governor action is still erratic, replacing the spring with a new one and resetting the adjustments will usually correct the trouble.

1. Adjust the carburetor main jet for the best fuel mixture while operating the plant with a full rated load connected.
2. Adjust the carburetor idle needle with no load connected.
3. Adjust the length of the governor linkage and check
3. linkage and throttle shaft for binding or excessive looseness.
4. Adjust the governor spring tension for rated speed at no load operation with booster disconnected (or held inoperative).
5. Adjust the governor sensitivity.
6. Recheck the speed adjustment.
7. Set the carburetor throttle stop screw.
8. Set the vacuum speed-booster.

VOLTAGE CHART FOR CHECKING GOVERNOR REGULATION

ALTERNATING CURRENT TYPES OF PLANTS NOTE: Output rating is at UNITY power factor load.	120-VOLT 1-PHASE 2-WIRE OR 120/240-V 1-PHASE 3-WIRE	240-VOLT 1-PHASE 2-WIRE OR 240-VOLT 3-PHASE 3-WIRE
Maximum No Load Volts	126	252
Minimum Full Load Volts Without Booster	110	220
Maximum Voltage Drop from No Load Operation to Full Load Operation	16	32
Preferred Voltage Regulation, No Load to Full Load Operation	122-118	244-236
Preferred Voltage Spread	5	9

SPEED CHART FOR CHECKING GOVERNOR REGULATION

ALTERNATING CURRENT TYPES OF PLANTS	FOR ALL 60-CYCLE PLANTS	FOR ALL 50-CYCLE PLANTS
Maximum No Load Speed		
RPM	1920	1620
Cycles (Current Frequency)	64	54
Minimum Full Load Speed Without Booster		
RPM	1710	1500
Cycles	57	50
Maximum Speed Drop from No Load Operation to Full Load Operation		
RPM	90	90
Cycles	3	3
Preferred Speed Regulation, No Load to Full Load Operation		
RPM	1830-1770	1590-1530
Cycles	61-59	53-51
Preferred Speed Spread		
RPM	60	60
Cycles	2	2

VOLTAGE CHART
FOR CHECKING GOVERNOR REGULATION

DIRECT CURRENT TYPES OF PLANTS	115 VOLT DC	250 VOLT DC MAGNET SERVICE
Maximum No Load Volts	120	270
Minimum Full Load Volts Without Booster	110	240
Maximum Voltage Drop from No Load to Full Load	10	30
Preferred Voltage Regulation, No Load to Full Load	120-110	265-245
Preferred Voltage Spread	—	20

SPEED CHART
FOR CHECKING GOVERNOR REGULATION

DIRECT CURRENT TYPES OF PLANTS	115 VOLT DC	250 VOLT MAGNET SERVICE
Maximum No Load Speed RPM (Revolutions Per Minute)	2000*	2000**
Minimum Full Load Speed Without Booster RPM	1800*	1800**
Maximum Speed Drop from No Load Operation to Full Load Operation RPM	200	200

Note * - For models prior to Spec D, speed is 2400-2700 rpm.

Note** - For Models prior to Spec D, speed is 2500-2750 rpm.

LINKAGE

The engine starts at wide open throttle. The length of the linkage connecting the governor arm to the throttle shaft and lever is adjusted by rotating the ball joint. Adjust this length so that with the engine stopped and tension on the governor spring, the stop on the carburetor throttle lever just contacts the underside of the carburetor bowl. This setting allows immediate control by the governor after starting. It also synchronizes travel of the governor arm and the throttle shaft.

SPEED ADJUSTMENT

With the warmed-up plant operating at no load, and with the booster external spring disconnected (or otherwise held inactive), adjust the tension of the governor spring. Refer to Voltage Chart and the Speed Chart and select the column which corresponds to the nameplate of the plant in question. turn the speed adjusting nut to obtain a voltage and speed reading within the limits shown.

SENSITIVITY ADJUSTMENT

Refer to the Governor Adjustment illustration, and to the Voltage and Speed Charts. Check the voltage and speed, first with no load connected and again with a full load. Adjust the sensitivity so as to give the closest regulation (least speed and voltage difference between no load and full load) without causing a hunting condition.

To increase sensitivity (closer regulation), shift the adjusting clip toward the governor shaft. On earlier models, prior to spec D, turn the adjusting stud counterclockwise. An adjustment for too much sensitivity will cause alternate increase and decrease of engine speed (hunting).

To decrease sensitivity, shift the adjusting clip toward the outer end of the governor arm. On earlier models, turn the adjusting stud clockwise. Too little sensitivity will result in too much difference in speed between no load and full load conditions.

Any change in the sensitivity adjustment usually requires a compensating speed (spring tension) adjustment.

SPEED-BOOSTER

After satisfactory performance under various loads has been attained by governor adjustments without the booster, the booster can be connected. Connect the booster external spring to the bracket on the governor link (rod). With the plant operating at no load, slide the bracket on the governor link just to the position where there is no tension on the external spring (Fig. 3-4).

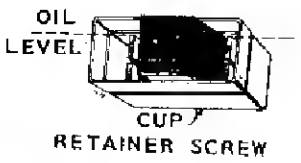
Apply a full rated electrical load to the generator. The output voltage should stabilize at nearly the same reading for full load as for no load operation. The speed may remain about the same or increase when the load is applied, resulting in a frequency 1 or 2-cycles *higher than* the no load frequency. (1-cycle is equal to 30 rpm for a 4-pole generator). If the rise in frequency is more than 2-cycles, lessen the internal spring tension. If there is a drop in the frequency, increase the booster internat spring tension. To increase the tension, pull out on the spring bracket, and move the pin to a different hole.

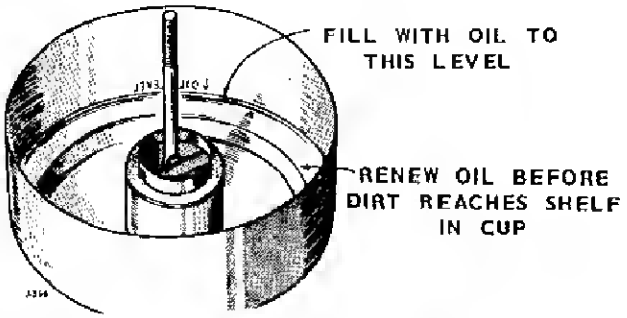
With the booster disconnected, a maximum drop of 3-cycles from no load to full load is normal. With the booster in operation, a maximum *increase* of 2-cycles from no load to full load is normal. A drop of 1-cycle at 1/4 load is permissible, giving an over all spread of 3-cycles, maximum.

The effect of the booster is limited by the general condition of the engine. The booster cannot compensate for a loss in engine vacuum caused by leaky valves, worn piston rings, etc.

4CCK MAINTENANCE

PERFORM ALL MAINTENANCE DETAILS AS SPECIFIED IN THE MAINTENANCE SCHEDULE



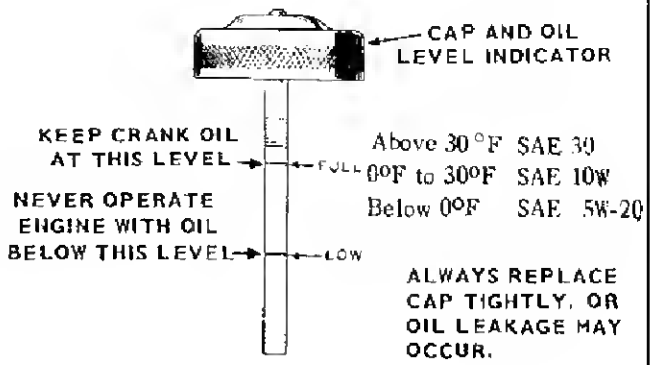


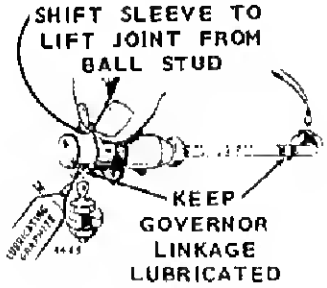
AIR CLEANER

Fill to level indicated on cup. Use the same type of oil as used in crankcase. Contractors model, remove cartridge and shake out accumulated dirt. Do not wash. Install new new cartridge every 500 hours.

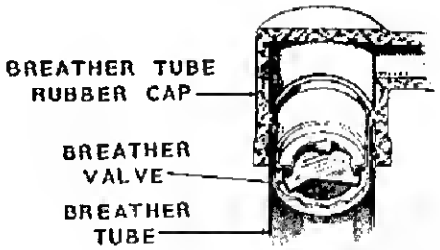
CRANKCASE OIL

Oil capacity is four U.S. quarts. Fill to the *full* mark on oil indicator. Use a good quality detergent oil classified for service MS or MS/DG. Do not use service DS oil at any time. Use the proper SAE number of oil for the expected temperature conditions. Do not mix brands or grades. Extremely dusty or low temperature conditions require oil change at 50-hrs.





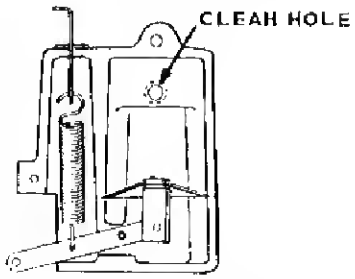
GOVERNOR LINKAGE



CRANKCASE BREATHER

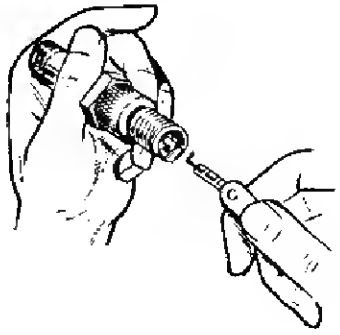
Lift off rubber breather cap. Carefully pry valve from cap. Otherwise press hard with both of your thumbs on top of cap and fingers below to release valve from rubber cap. Wash this fabric flapper type check valve in fuel. Dry and reinstall positioning perforated disc toward engine.

Wash valve in fuel, dry and install positioning perforated disc toward engine.



SPEED BOOSTER

Use a fine wire to clean the small hole in the short vacuum tube which fits into the hole in the top of the engine intake manifold. Do not enlarge this hole. If there is tension on the external spring, when the plant is operating at no load or light load, it may be due to improper adjustment, restricted hole in the small vacuum tube, or a leak in the booster diaphragm or gasket.



SPARK PLUG GAP
0.025" Gasoline
0.018" Gas

FIG. 4-1

FUEL SEDIMENT

Empty carburetor and fuel filter (strainer) bowls of any accumulated sediment. Clean filter screen thoroughly. Reassemble and check for leaks.

GASOLINE FUEL

Use *regular* grade automobile gasoline. *Do not* use highly leaded *premium* types. Never fill the tank when the engine is running. Leave [illegible] tank space [illegible] expansion.

MAINTENANCE SCHEDULE

Use this factory recommended maintenance schedule (based on favorable operating conditions) to serve as a guide to get long and efficient plant life. Neglecting routine maintenance can result in failure or permanent damage to the plant. Maintenance is divided into two categories: (1) *operator maintenance* -- performed by the operator and (2) *critical maintenance* performed by qualified service personnel (*Onan* dealer). A Major Service Manual is available (see general information page) if needed.

OPERATOR MAINTENANCE SCHEDULE

MAINTENANCE ITEMS	OPERATIONAL HOURS			
	8	50	100	200
Inspect Plant	x			
Check Fuel	x			
Check Oil Level	x			
Check Air Cleaner		x		
Clean Governor Linkage		x		
Check Spark Plug			x	
Change Crankcase Oil				x
Clean Crankcase Breather				x
Clean Fuel System				x
Check Battery				x

x1 - Perform more often in extremely dusty conditions.

For any abnormalities in operation, unusual noises from engine or generator, loss of power, overheating, etc., contact your ONAN dealer.

CRITICAL MAINTENANCE SCHEDULE

MAINTENANCE ITEMS	OPERATIONAL HOURS			
	200	500	1000	5000
Check Breaker Points	x			
Clean Commutator and Collector Rings	x1			
Check Brushes	x2			
Remove Carbon & Lead		x		
Check Valve Clearance		x		
Clean Carburetor		x		
Clean Generator			x	
Remove & Clean Oil Base			x	
Grind Valves			x	
General Overhaul				x

x1 - Perform more often in extremely dusty conditions.
x2 - Replace revolving field collector ring brushes when worn to 5/16" or less - Replace all other brushes when worn to 5/8" or less

BOLT TORQUES	FT LB	Tappets (Intake & Exhaust)	0.010" to 0.012"
Spark Plugs	25-30	Ignition Breaker Points Gap	0.020"
Cylinder Head	29-31	Ignition Timing (1500 to 2400 rpm)	19° BTC
Oil Base [illegible]	20-25	Ignition Timing (2600 rpm)	25° BTC
Spark Plug Gap	Gasoline — 0.025"		
	Gas — 0.018"		

MAJOR SERVICE MANUAL IS AVAILABLE - SEE GENERAL INFORMATION

MAINTENANCE DIAGNOSIS

POSSIBLE CAUSE	REMEDY
ENGINE WILL NOT CRANK	
Battery discharged.	Recharge.
Loose connections.	Tighten connections.
Defective starting circuit.	Repair or replace as necessary.
Defective switch.	Replace.
ENGINE CRANKS TOO STIFFLY	
Too heavy oil in crankcase.	Drain, refill with lighter oil.

POSSIBLE CAUSE	REMEDY
ENGINE WILL NOT START WHEN CRANKED	
Lack of fuel or faulty carburetion.	Refill tank. Check fuel system. Clean, adjust, as necessary.
Clogged fuel screen.	Clean.
Cylinders flooded.	Crank few times with spark plugs removed.
Poor fuel.	Drain, fill with fresh fuel.
Poor compression.	Tighten cylinder heads & spark plugs.
Wrong breaker point gap.	Reset breaker points.

POSSIBLE CAUSE	REMEDY
EXCESSIVE OIL CONSUMPTION. LIGHT BLUE SMOKY EXHAUST	
Oil leaks from oil base or connections. This does not cause smoky exhaust.	Replace gaskets. Tighten screws and connection. Check breather valve.
Oil too light or diluted.	Drain, refill with correct oil.
Engine misliring.	Clean, adjust, or replace spark plugs.
Faulty ignition.	Clean, adjust, or replace spark plugs.
Too much oil.	Drain excess oil.
BLACK, SMOKY EXHAUST, EXCESSIVE FUEL CONSUMPTION, FOULING OF SPARK PLUG WITH SOOT, POSSIBLE LACK OF POWER UNDER HEAVY LOAD	
Fuel mixture too rich.	Adjust carburetor or choke. Install needed carburetor parts.
Choke not open.	Inspect linkage and setting.
Dirty air cleaner.	Clean.
Excessive crankcase pressure.	Clean breather valve.
ENGINE STOPS UNEXPECTEDLY	
Fuel tank empty.	Fill with fresh fuel.
Defective ignition.	Check ignition system.
SHARP METALLIC THUO, ESPECIALLY WHEN COLD ENGINE FIRST STARTED	
Low oil supply.	Add oil.
Oil badly diluted.	Change oil.
PINGING SOUND WHEN ENGINE IS SUDDENLY OR HEAVILY LOADED	
Wiong spark plug.	Install correct spark plug.
Spark plug burned or carboned.	Install new plug.
Fuel stale or low octane.	Use good, fresh fuel.
Lean fuel mixture.	Clean & adjust carburetor.
LIGNT POUNDING KNOCK	
Low oil supply.	Add oil.
Oil badly diluted.	Change oil.

POSSIBLE CAUSE	REMEDY
ENGINE MISFIRES AT LIGHT LOAD	
Spark plug gap too narrow.	Adjust to correct gap.
Intake air leak.	Tighten or replace manifold and carburetor gaskets.
Faulty ignition.	Clean, adjust or replace spark plugs.
Low compression.	Tighten cylinder head and spark plugs. Grind valves.
ENGINE MISFIRES AT HEAVY LOAD	
Spark plug gap too wide.	Adjust gap.
Faulty ignition.	Clean, adjust or replace spark plugs.
Clogged carburetor.	Clean jet and adjust carb.
Clogged fuel screen.	Clean
ENGINE BACKFIRES	
Lean fuel mixture.	Clean or adjust carburetor.
Poor fuel.	Refill with good, fresh fuel.
ENGINE RACES	
Governor not controlling carburetor.	Check governor performance & linkage condition.
LOW OIL PRESSURE	
Defective gage.	Replace.
Oil too light or diluted from leaking fuel pump diaphragm.	Drain. Refill with proper oil. Repair or replace fuel pump.
Oil too low.	Add oil.
Sludge on oil cup screen.	Clean screen & oil sump.
Badly worn oil pump.	Replace.
HIGN OIL PRESSURE	
Defective gage.	Replace.
Oil too heavy grade.	Drain. Refill.
Clogged oil passages.	Clean all lines & passages.
Oil relief valve stuck.	Clean by-pass. Replace if needed.
ENGINE OVERHEATING	
Insufficient cooling air.	Check air entrance and exit.
Improper lubrication.	See Low Oil Pressure.

POSSIBLE CAUSE	REMEDY
Fuel mixture too lean.	Adjust carburetor.
Generator overloaded.	Reduce load.
VOLTAGE LOW AT FAR END OF LINE BUT NORMAL NEAR POWER PLANT	
Too small line wire for load and distance.	Install larger or extra wires or reduce load.
ELECTRIC MOTOR RUNS TOO SLOWLY AND OVERHEATS AT FAR END OF LINE BUT OK IF USED NEAR POWER UNIT	
Too small line wire for load and distance.	Install larger or extra wires or reduce load.
VOLTAGE UNSTEADY BUT ENGINE NOT MISFIRING	
Speed too low.	Adjust governor to correct speed.
Loose connections.	Tighten connections.
Fluctuating load.	Correct any abnormal load condition causing trouble.

POSSIBLE CAUSE	REMEDY
GENERATOR OVERHEATING (Approximately 160°F higher than ambient)	
Overloaded.	Reduce load.
VOLTAGE DROPS UNDER HEAVY LOAD	
Engine lacks power.	See remedies for engine misfires under heavy load.
Poor compression.	Tighten cylinder head & spark plugs.
Faulty carburetion.	Clean the fuel system. Clean, adjust or replace parts necessary.
Dirty air cleaner.	Clean.
Restricted exhaust line.	Clean or increase the size.
Choke partially closed.	See that it opens fully.

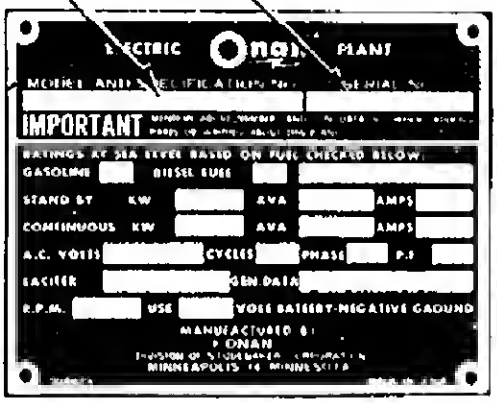
INSTRUCTIONS FOR ORDERING REPAIR PARTS

For parts or service, contact the dealer from whom you purchased this equipment or refer to your Nearest Authorized Parts & Service Center.

To avoid errors or delay in filling your parts order, please furnish all information requested.

Always refer to the nameplate on your plant:

1. Always give the MODEL & SPEC. NO. and SERIAL NO.



For handy reference, insert YOUR plant nameplate information in the spaces above.

2. Do not order by reference number or group number, always use part number and description.

3. Give the part number, description and quantity needed of each item. If an older part cannot be identified, return the part prepaid to your dealer or nearest AUTHORIZED SERVICE STATION. Print your name and address plainly on the package. Write a letter to the same address stating the reason for returning the part.

4. State definite shipping instructions. Any claim for loss or damage to your unit in transit should be filed promptly against the transportation company making the delivery. Shipments are complete unless the packing list indicates items are back ordered.

Prices are purposely omitted from this Parts Catalog due to the confusion resulting from fluctuating costs, import duties, sales taxes, exchange rates, etc.

For current parts prices consult your Onan Dealer, Distributor, or Parts and Service Center.

"En esta lista de partes los precios se omiten de proposito, ya que bastante confusion resulto de fluctuaciones de los precios, derechos aduanales, impuestos de venta, cambios extranjeros etc.

Consiga los precios vigentes de su distribuidor de productos "ONAN".

PARTS CATALOG

This catalog applies to the standard CCK Plants as listed below. Parts are arranged in groups of related items. Each illustrated part is identified by a reference number corresponding to the same reference number below the illustration. Parts illustrations are typical. Using the *Model and Spec No.* from the plant nameplate, select the Parts Key No. (1, 2, etc. in the last column) that applies to your plant Model and Spec No. This Parts Key No. represents parts that differ between models. Unless otherwise mentioned in the description, parts are interchangeable between models. Right and left plant sides are determine by *facing* the engine end (front) of the plant.

PLANT DATA TABLE

***** MODEL & SPEC	TYPE	ELECTRICAL DATA					PARTS KEY NO.
		WATTS	VOLTS£	CYCLES	WIRE	PHASE	
**** 4CCK-1M/	MANUAL	4000**	120	60	2	1	1
4CCK-2M/	MANUAL	4000**	240	60	2	1	1
4CCK-3M/	MANUAL	4000**	120/240	60	3	1	1
4CCK-4M/	MANUAL	4000**	120/208	60	4	3	1
4CCK-5M/	MANUAL	4000**	240	60	3	3	1
305CCK-51M/	MANUAL	3500	120	50	2	1	1
305CCK-52M/	MANUAL	3500	240	50	2	1	1
305CCK-53M/	MANUAL	3500	120/240	50	3	1	1
**** 4CCK-1P/	PORTABLE	4000**	120	60	2	1	2
4CCK-2P/	PORTABLE	4000**	240	60	2	1	2
4CCK-3P/	PORTABLE	4000**	120/240	60	3	1	2
4CCK-4P/	PORTABLE	4000**	120/208	60	4	3	2
4CCK-5P/	PORTABLE	4000**	240	60	3	3	2
305CCK-51P/	PORTABLE	3500	120	50	2	1	2
305CCK-52P/	PORTABLE	3500	240	50	2	1	2
305CCK-53P/	PORTABLE	3500	120/240	50	3	1	2
305CCK-55P/	PORTABLE	3500	240	50	3	3	2
**** 4CCK-1R/, 4CCK-1RV/*	REMOTE	4000**	120	60	2	1	3
4CCK-2R/, 4CCK-2RV/*	REMOTE	4000**	240	60	2	1	3
4CCK-3R/, 4CCK-3RV/*	REMOTE	4000**	120/240	60	3	1	3
4CCK-3CR/, 4CCK-3CRV/*	REMOTE	4000**	120/240	60	ℓℓ	1	3
4CCK-4R/, 4CCK-4RV/*	REMOTE	4000**	120/208	60	4	3	3
4CCK-5R/, 4CCK-5RV/*	REMOTE	4000**	240	60	3	3	3
305CCK-51R/, 305CCK-51RV/*	REMOTE	3500	120	50	2	1	3
305CCK-52R/, 305CCK-52RV/*	REMOTE	3500	240	50	2	1	3
305CCK-53R/, 305CCK-53RV/*	REMOTE	3500	120/240	50	3	1	3
305CCK-55R/, 305CCK-55RV/*	REMOTE	3500	240	50	3	3	3
4CCK-52R/	REMOTE	4250	240	50	2	1	4
4CCK-53R/	REMOTE	4250	120/240	50	3	1	4
5CCK-1M/	MANUAL	5000	120	60	2	1	5
5CCK-2M/	MANUAL	5000	240	60	2	1	5
5CCK-3M/	MANUAL	5000	120/240	60	3	1	5
5CCK-4M/	MANUAL	5000	120/208	60	4	3	5
5CCK-5M/	MANUAL	5000	240	60	3	3	5
5CCK-1P/	PORTABLE	5000	120	60	2	1	6
5CCK-2P/	PORTABLE	5000	240	60	2	1	6
5CCK-3P/	PORTABLE	5000	120/240	60	3	1	6
5CCK-4P/	PORTABLE	5000	120/208	60	4	3	6
5CCK-5P/	PORTABLE	5000	240	60	3	3	6
5CCK-1R/, 5CCK-1RV/*	REMOTE	5000	120	60	2	1	7
5CCK-2R/, 5CCK-2RV/*	REMOTE	5000	240	60	2	1	7
5CCK-3R/, 5CCK-3RV/*	REMOTE	5000	120/240	60	3	1	7
5CCK-3CR/, 5CCK-3CRV/*	REMOTE	5000	120/240	60	ℓℓ	1	7
5CCK-4R/, 5CCK-4RV/*	REMOTE	5000	120/208	60	4	3	7
5CCK-5R/, 5CCK-5RV/*	REMOTE	5000	240	60	3	3	7
5CCK-115P/	PORTABLE	5000	120	DC	–	–	8
5CCK-150M/	MANUAL	5000	250	DC	–	–	9
5CCK-150R/	REMOTE	5000	250	DC	–	–	10
4CCK-3E2236/	Contractor Models - See Special Parts List Following Standard Parts List						
4CCK-1RV6000/ 5CCK-1R6000/ 4CCK-2RV6000/ 5CCK-2R6000/ 4CCK-3RV6000/ 5CCK-3R6000/	Mobile application plants - See Special Parts List Following Standard Parts List.						

* - These remote type plants have Vacu-Flo type cooling (V appears in model).

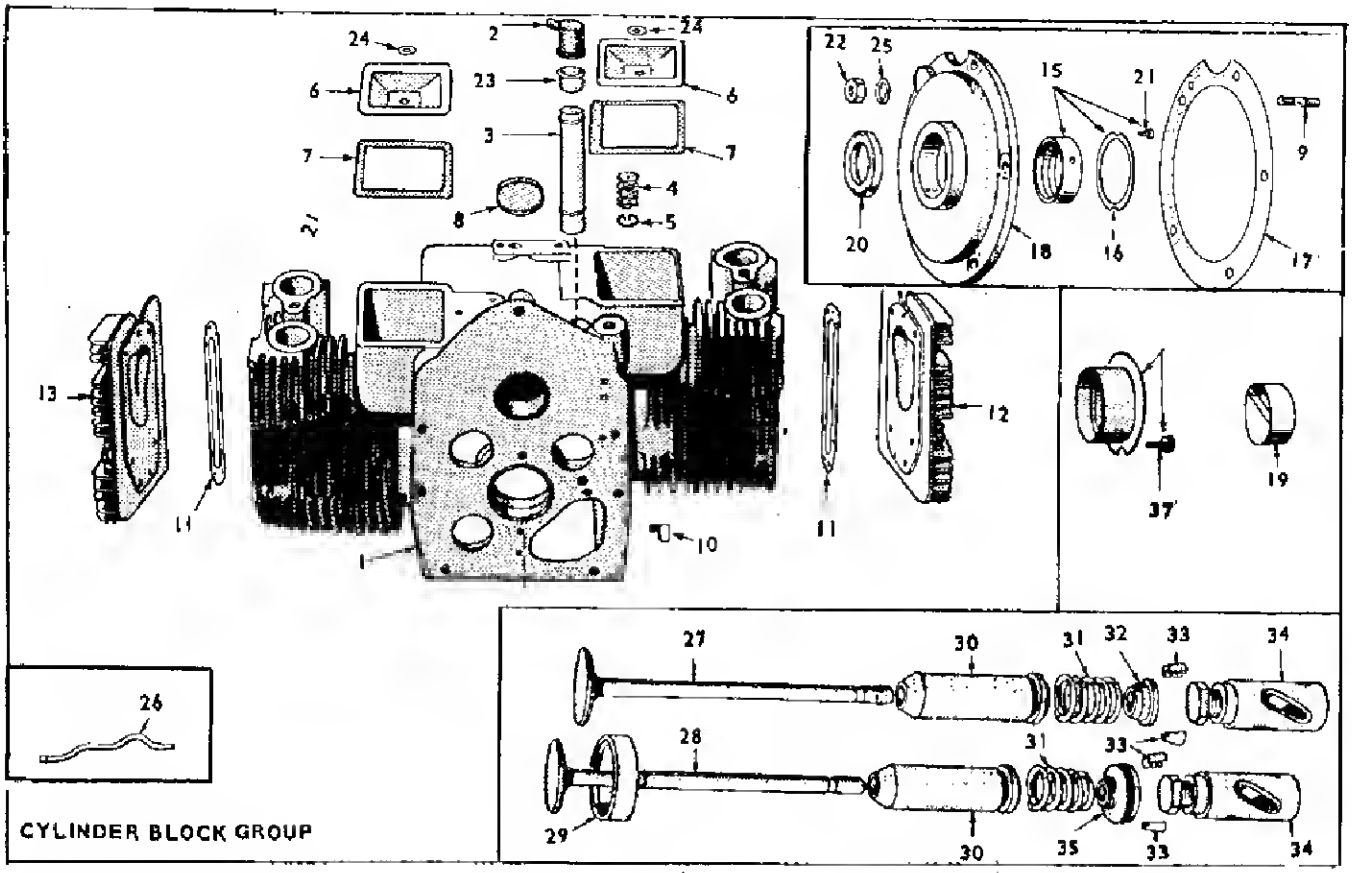
** - Maximum standby rating is shown. Continuous rating also shown on nameplate.

**** --Identical to early models stamped 305CCK-

***** - The Specification Letter advances (A to B, B to C etc.) with manufacturing changes.

£ - Reference to 120, 240 and 120/240-volt also applies to 115, 230 and 115/230-volt.

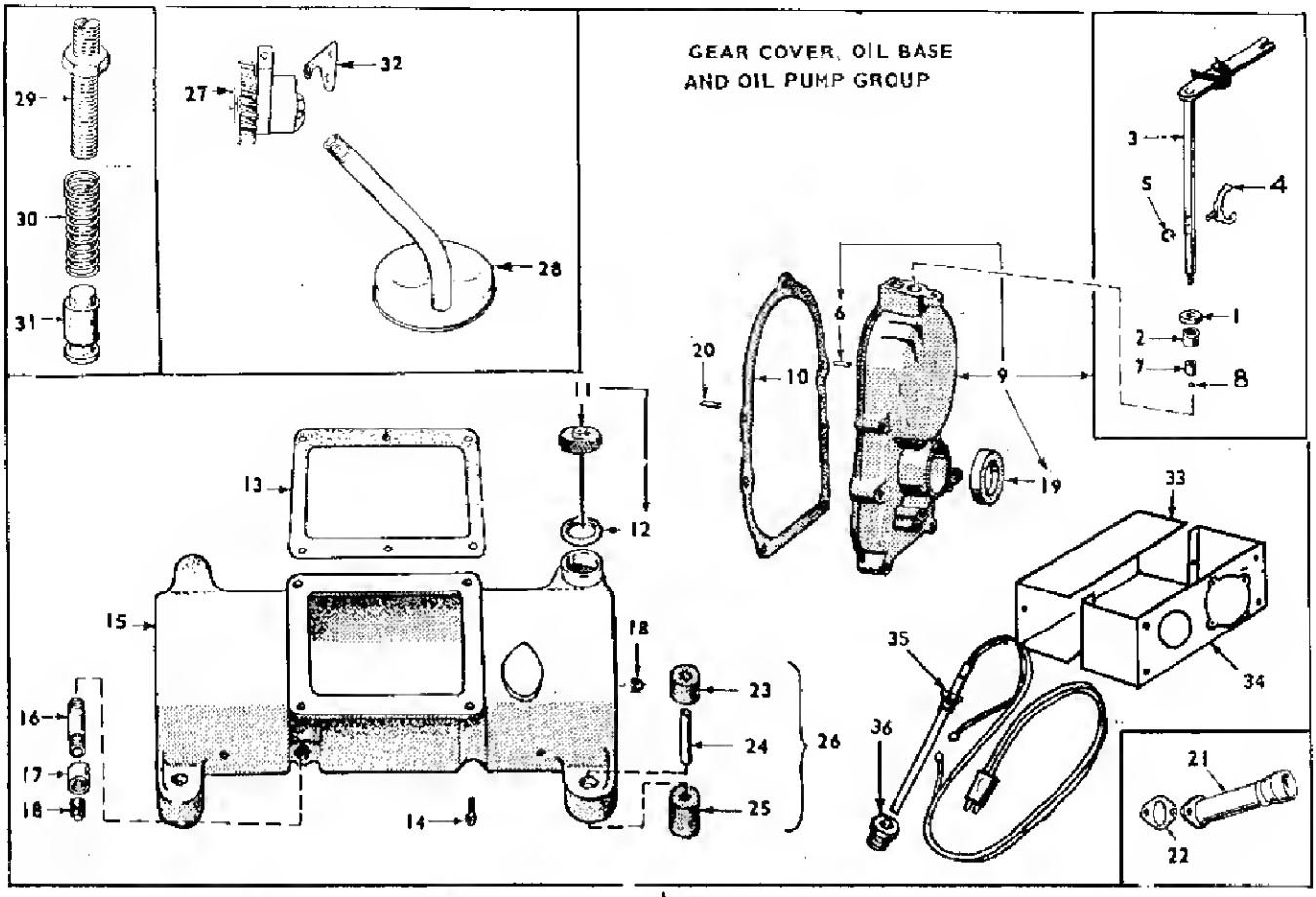
ℓℓ - These generators have 4 load wires which are reconnectible for 120-volt 2-wire service, or 240-volt 2-wire service, or 120/240-volt 3-wire service.



CYLINDER BLOCK GROUP

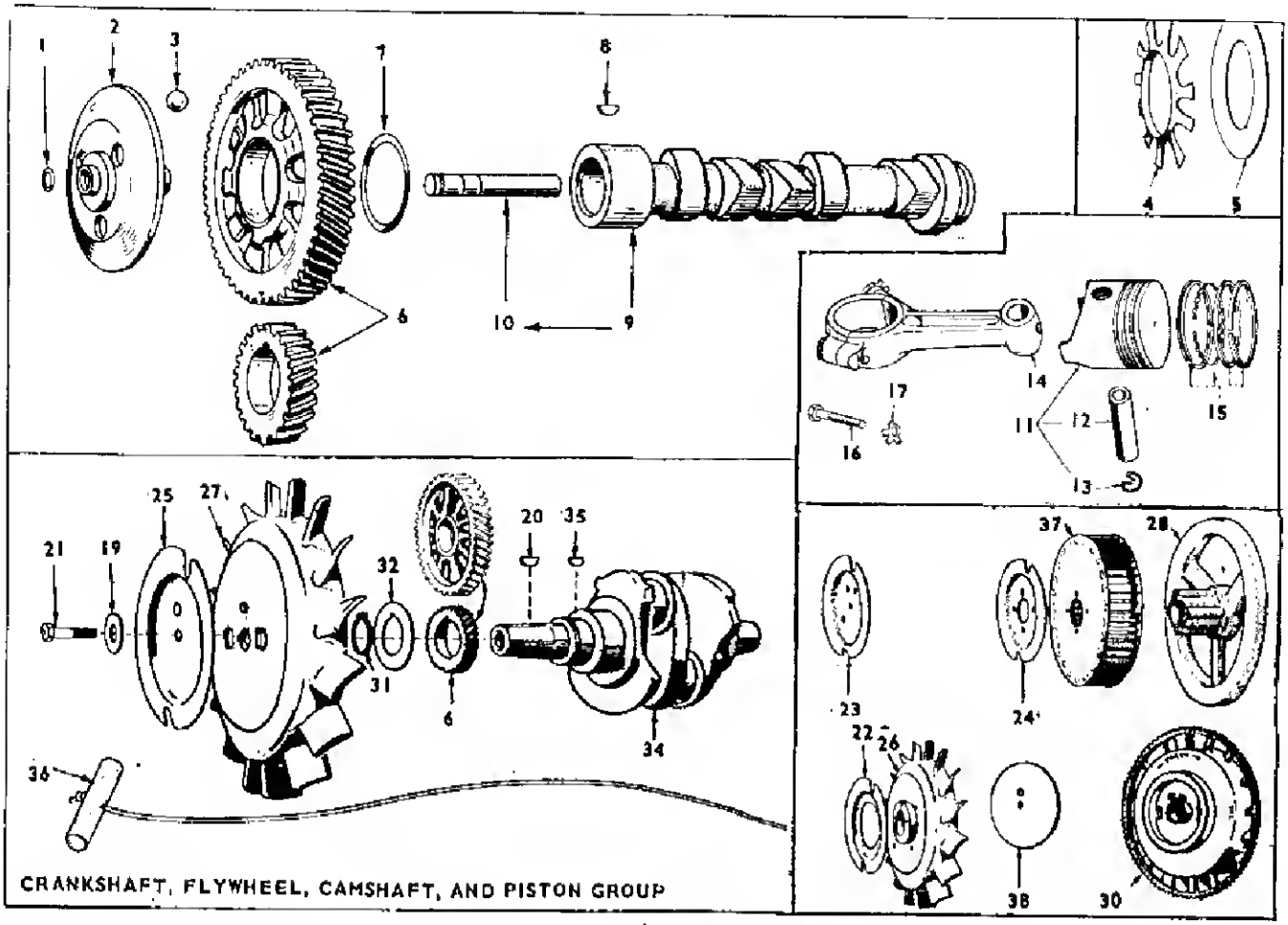
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	110A915	1	Block Assy., Cyl. (Incl. Brg. Plate, Brgs., Guides & Seats)
2	123B293	1	Cap, Breather Tube (Rubber)
3	123A129	1	Tube, Breather (Incl. Steel Baffles) Replaces 123A620)
4	123A591	1	Baffle, Breather Tube (Models W/O Steel Baffle)
5	123A643	1	Ring, Breather Baffle Retainer (Models W/O Steel Baffles)
6	110A666	2	Cover, Valve Compartment
7	110A667	2	Gasket, Valve Cover
8	517-48	1	Plug, Camshaft Expansion Replaces 517-18
9	520A114	5	Stud, Rr. Bearing Plate Mtg. (5/16 x 1-5/16")
10	502A20	1	Elbow, Street, Oil Line
11	110A892	2	Gasket, Cylinder Head
12	HEAD CYLINDER, RIGHT, #2 CYLINDER		
	110D890	1	Standard Compression
	110D884	1	Hi-Compression, Gas Fuel Mdls.
13	HEAD, CYLINDER, LEFT, #1 CYLINDER		
	110D891	1	Standard Compression
	110D883	1	Hi-Compression, Gas Fuel Mdls.
	BEARING, CRKSHFT., FRT. OR RR., SPECIFY: STD., OR .002", .010", .020", .030" UNDER		
14	101K181	2	To Spec F, Flange Type (Incl. Stop Pin)
15	101K389	2	Begin Spec F (Incl. Thrust Washer & Stop Pins)
16	104AS75	2	Washer, Crkshft. Brg. Thrust Begin Spec F
17	101K115	1	Gasket Kit, Brg. Plate
18	PLATE, BEARING (EXCL. BEARING)		
	101C258	1	To Spec F
	101C316	1	Begin Spec F
19	101A367	2	Bearing, Camshaft Frt. & Rr. (Precision)
20	509A41	1	Seal, Bearing Plate
21	516A72	4	Pin, Main Brg. Stop (2 Only To Spec F)
22	110A445	5	Nut, Bearing Plate Stud
23	123A104	1	Valve, Breather Tube
24	526-63	2	Washer (Copper) Valve Comp.
25	851-5	5	Washer, Lock (5/16 x Special Width) Rear Bearing Plate
26	120A386	1	Tube, Crankcase Oil
27	110B881	2	Valve, Intake (Steel)
28	110B880	2	Valve, Exhaust (Stellite)
29	110A872	2	Insert, Exh. Valve Seat (Stellite) - Specify: Std., or .002", .005", .010", .025" Over
30	110A902	4	Guide, Valve
31	110A539	4	Spring, Valve
32	110A893	2	Washer, Valve Sprg. Ret., Int.
33	110A639	8	Lock, Valve & Sprg. Ret.
34	115A6	4	Tappet, Valve - Specify: Std. or .005" Over
35	110A904	2	Rotocap, Exhaust Valve
	SCREW, HEX HEAD CAP (HARDENED)		
	110A879	8	Cyl. Hd. (5/16-18 x 1-1/4")
	110A284	10	Cyl. Hd. (5/16-18 x 1-1/2") To Serial #549970
	114A22	10	Cyl. Hd. (5/16-18 x 1-3/4") Begin Serial #549970
	114A22	4	Gear Cover (5/16-18 x 1-3/4")
	800-34	1	Gear Cover (5/16-18 x 2-1/4")
	800-54	2	Intake Man. (3/8-16 x 2")
	526A122	18	Washer (Flat) Cyl. Hd. Screws

NOTE: **Engine valves and related parts do not apply to spec A plants.** Order valves, valve spring retainers, rotor caps, guides, and cylinder block by description giving complete Model, Spec, and Serial No.



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	509P8	1	Seal, Oil - Governor Shaft
2	510P13	1	Bearing, Gov. Shaft Upper
3	150-710	1	Shaft & Arm Assy., Gov. (Incl. Adj. Clip) Replaces 150B234
4	150A620	1	Yoke, Governor Shaft
5	518-129	1	Ring, Yoke Retainer "E"
6	516-130	1	Pin, Gov., Cup Stop (In Gear Cover) Replaces 516-117
7	510A8	1	Bearing, Gov. Shaft, Lower
8	510P14	1	Ball, Bearing, Gov. Shaft
9	103-207	1	Cover Assy., Gear (Incl. Cover & 1 through 8 plus 19) Replaces 103C197
10	103B11	1	Gasket, Gear Cover
11	INDICATOR, OIL FILL		
			Key 1,2,5,6,8
	123A510	1	To Spec D
	123A489	1	Begin Spec D
	123A489	1	Key 3,4,7,9
	123A544	1	Key 10
12	123A191	1	Gasket, Oil Fill Cap
13	102B158	1	Gasket, Oil Base Mtg. (Repl. 102B8)
14	102A455	4	Screw, Cap, Oil Base to Block
15	BASE, OIL		
			Key 1,2,5,6,8
	102A331	1	To Spec D
	102A418	1	Begin Spec D
	102A330	1	Key 3,4,7,9
	102E395	1	Key 10
16	NIPPLE, OIL DRAIN (Optional)		
	505-342	1	Key 1,2,5,6,8,9
	505-76	1	Key 3,4,7,10
17	505-28	1	Coupling, Oil Drain (Optional)
18	505-110	1	Plug, Oil Drain
19	509A40	1	Seal, Gear Cover
20	516A11	2	Pin, Gear Cover (5/16x1-1/8")
21	123B531	1	Tube, Oil Fill, Key 10

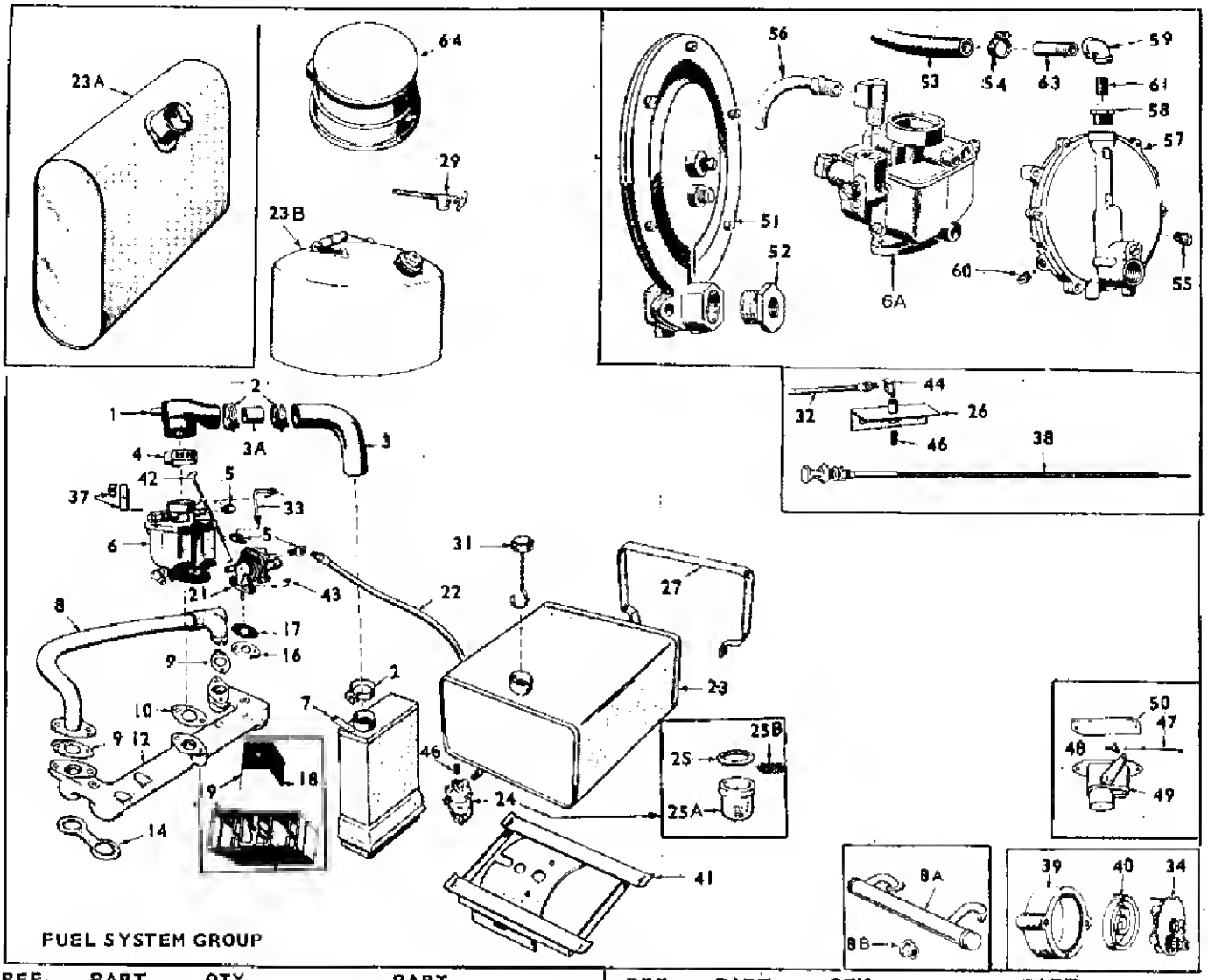
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
22	141A78	1	Gasket, Oil Fill Tube Mtg. Key 10
23	402A131	4	Cushion, Plant Mtg. (Upper)
24	BUSHING, SPACER		
	402A137	4	Key 1,2,3,4,5,6,7,8,9
	402A137	2	Key 10 (Gen. End)
	402A176	2	Key 10 (Eng. End)
25	CUSHION, PLANT MOUNTING (Lower)		
	402A38	4	Key 1,2,3,4,5,6,7,8,9
	402A38	2	Key 10 (Gen. End)
	402A36	2	Key 10 (Eng. End)
26	CUSHION ASSY., PLANT MTG. (INCL. CUSHIONS, BUSHING & HARDWARE)		
	402A145	4	Key 2,6,8
	402A138	4	Key 1,3,4,5,7,9
	402A138	2	Key 10 (Gen. End)
	402A177	2	Key 10 (Eng. End)
27	120A491	1	Pump, Oil, Complete (Internal parts not sold separately.) Replaces 120A394
28	CUP, OIL PUMP INTAKE (INCL. PIPE, CUP AND SCREEN)		
			Key 1,2,5,6,8
	120B411	1	To Spec D
	120B400	1	Begin Spec D
	120B400	1	Key 3,4,7,9,10
29	120A187	1	Stud Assy, By-Pass Adj, (Incl. Nut)
30	120A140	1	Spring, By-Pass Valve
31	120A398	1	Valve, By-Pass
32	120K161	1	Gasket Kit, Oil Pump
33	333B9	1	Cover, Heater Therm. Box (Opt.)
34	333A19	1	Thermostat Switch & Box (Opt.)
35	333B102	1	Heater, Oil Base (Opt.)
36	505-19	1	Bushing, Oil Base Heater (Opt.)
	309-10	1	Switch, Low Oil Pressure (Optional)
	122-37	1	Cartridge, Oil Filter, Incl. Gasket (Optional)
	526-66	1	Washer, Oil Pressure Relief Valve Adjusting Screw



CRANKSHAFT, FLYWHEEL, CAMSHAFT, AND PISTON GROUP

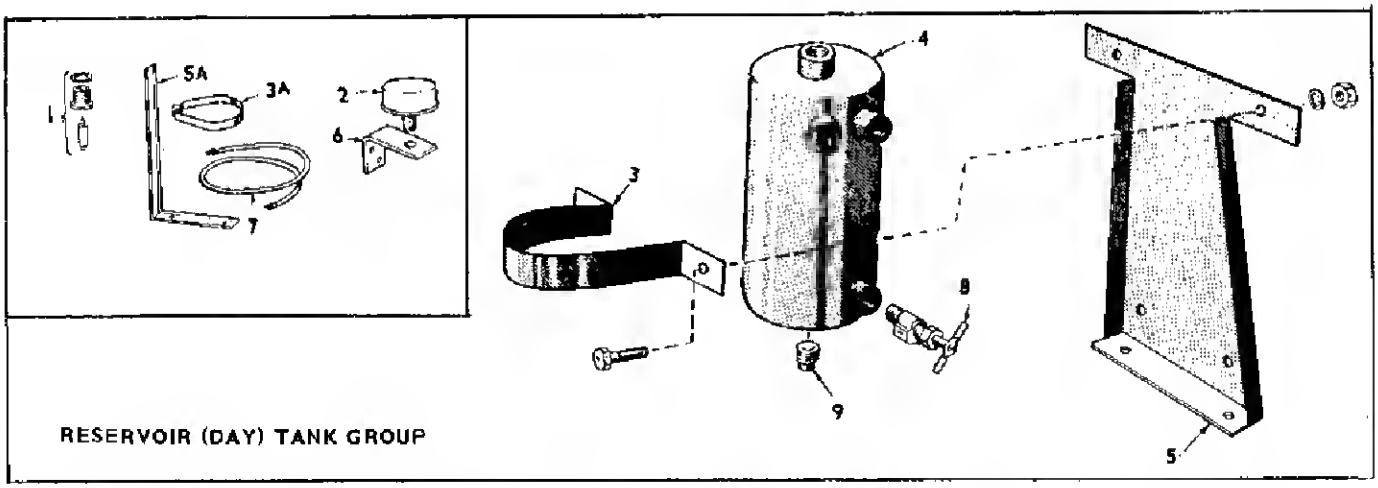
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	150A78	1	Ring, Camshaft Center Pin
2	150A612	1	Cup, Governor
3	BALL, GOVERNOR FLY		
	510P15	10	Key 1,2,3,4,5,6
	510P15	5	Key 8,9,10
4	150B85	1	Spacer, Gov. Fly Ball, To Spec F
5	150A77	1	Plate,Gov. Fly Ball,To Spec F
6	GEAR SET, TIMING, (INCL. CAM. & CRKSHFT.GRS.)		
	105A72	1	To Spec F
	105-192	1	Begin Spec F, Cam. Gr. Incl. Flyball Spacer and Plate
7	105A4	1	Washer, Camshaft Gr. Thrust
8	515-1	1	Key, Camshaft Gr. Mtg.
9	105-140	1	Camshaft (Incl. Center Pin)
10	150A75	1	Pin, Camshaft Center
11	112A71	2	Piston & Pin (Incl. Ret. Rings) Specify: Std. or .010", .020", .030",.040" Over.
12	112A69	2	Pin, Piston - Specify: Std. or .002" Over.
13	112A3	4	Ring, Piston Pin Ret.
14	114C98	2	Rod, Connecting –Specify: Std, .010", .020", .030" Under.
15	113A88	2	Ring Set, Piston – Specify: Std, or .010", .020", .030", .040" Over.
16	110A284	4	Screw, Connecting Rod Cap
17	114A59	4	Washer, Con. Rod Cap Screw Lock
19	WASHER, WHEEL MOUNTING		
	526A17	1	Key 3,4,5,7 (Also Key 1,2,5,6 8,9 To Spec D)
	526A128	1	Key 10

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
20	515-2	1	Key, Wheel Mounting
21	SCREW, WHEEL MOUNTING		
	104A170	1	Key 1,2,3,4,5,6,7,8,9
	104A369	1	Key 10
	SHEAVE, ROPE		
22	160B222	1	Key 1,2,5,6,8,9 To Spec D
23	192B291	1	Pressure Cooled Plts. Key 3,4, 7,10 To Spec D
24	192B272	1	Vacu-Flo Cooled Plts. Key 3, 4,7
25	192B308	1	Pressure Cooled Plts., Key 3,4,7,10 Begin Spec D
	192B308	1	Key 1,2,5,6,8,9 Begin Spec D
	FLYWHEEL		
26	160D202	1	Key 1,2,5,6,8,9 To Spec D
27	160D650	1	Key 1,2,5,6,8,9 Begin Spec D
	134D591	1	Pressure Cooled Plts., Key 3,4,7
28	104D266	1	Vacu-Flo Cooled Plts., Key 3, 4,7 To Serial 745278
28	104K691	1	Vacu-Flo Cooled Plts., Key 3, 4,7 Begin Serial 745278
30	134B675	1	Key 10 (Incl. Ring Gear)
31	518-14	1	Lock, Crankshaft Gr. Washer
32	104A43	1	Washer, Crankshaft Gr. Ret.
34	104D256	1	Crankshaft
35	515-1	1	Key, Crankshaft Gr. Mtg.
36	192A83	1	Rope, Manual Starting, Key 3, 4,7,10
37	134B565	1	Wheel, Blower (Vacu-Flo Cooled Plts.) Key 3,4,7
38	192B296	1	Backplate,Rope Sheave, Key 10



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	145B80	1	Inlet, Carburetor Air
2	503-280	3	Clamp, Air Cleaner Hose
3	503A480	1	Hose, Air Cleaner
3A	140A211	1	Sleeve, Air Cleaner Hose
4	503-107	1	Clamp, Air Inlet to Carb.
5	502-2	3	Elbow (Inv. Male) (2) Fuel Pump (1) Carburetor
6	CARBURETOR ASSEMBLY, GASOLINE		
	142A363	1	Manual Choke, Key 1,2,5,6,8, 9,10
	142A364	1	Electric Choke, Key 3,4,7
6A	CARBURETOR ASSY., GAS-GASOLINE (Optional)		
	142C367	1	Manual Choke, Key 1,2,5,6,8, 9,10
	142C366	1	Electric Choke, Key 3,4,7
7	140C399	1	Cleaner, Air
8	MANIFOLD, EXHAUST, PRESSURE COOLED PLTS.		
	154C526	1	Key 1,2,3,4,5,6,7,8,9 (Replaces 154C372)
	154C451	1	Key 10
8A	154C377	1	Manifold, Exh., Vacu-Flo Cooled Plants, Key 3,4,7
8B	505-138	1	Coupling (Reducer) Exh. Man., Vacu-Flo Cooled Plts., Key 3, 4,7
9	154A360	2	Gasket, Exh. Man. or Muffler Mtg.
10	141A78	1	Gasket, Carburetor Mtg.
12	MANIFOLD, INTAKE		
	154A383	1	Key 1,2,3,4,5,6,7
	154D356	1	Key 8,9,10
14	154A13	2	Gasket, Intake Manifold
16	149A45	1	Spacer, Fuel Pump
17	149A3	2	Gasket, Fl. Pp. & Spacer Mtg.
18	140A68	1	Screen, Air Cleaner
19	140K403	1	Cup Assy., Air Clnr., Incl. Screen
21	149D693	1	Pump, Fuel (Repl. 149C602)
22	501B5	1	Line, Fl. Filter to Fl. Pump (18-1/2") Key 1,2,3,4,5,6,7,9,10
	TANK, FUEL		
23	159C546	1	Key 2,6 (4-Gal.) Mounted
23A	159C558	1	Key 8 (6-Gal.) Mounted
23B	415A126	1	Key 1,3,4,5,7,9,10 (5-Gal.) Separate
24	149B79	1	Filter, Fuel, Key 1,2,3,4,5,6,7, 9,10
25	149-149	1	Gasket, Fuel Filter Bowl, Key 1,2,3,4,5,6,7,9,10
25A	149-150	1	Bowl, Fuel Filter, Key 1,2,3, 4,5,6,7,9,10
25B	149-202	1	Screen, Fuel Filter
26	149A616	1	Bracket, Fuel Filter, Key 1,3, 4,5,7,9,10
27	STRAP, FUEL TANK MOUNTING		
	159A537	2	Key 2,6
	159A588	2	Key 8
29	504A13	1	Valve, Fuel Tank Shut-off, Key 1,3,4,5,7,9,10
31	159B20	1	Cap, Fuel Tank, Key 2,6,8

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
32	LINE, FUEL, FLEXIBLE TANK TO UNIT		
	501A9		Key 1,3,4,5,7,8,9,10 (36")
	501A27		Key 1,3,4,5,7,9,10(48") Repl. 501A81
33	149A611	1	Line, Fuel Pump to Carb.
34	153A113	1	Cover, Elec. Choke, Key 3,4,7
37	153-263	1	Bracket & Clip, Choke, Key 1, 2,5,6,8,9
38	153B97	1	Choke, Manual, Key 1.2.5.6.8.9
39	153A58	1	Bracket, Elec. Choke, Key 3, 4,7
40	153A17	1	Element, Choke Bi-Metal, Key 3,4,7
41	159D531	1	Bracket, Fuel Tank Mtg., Key 2,6
42	149A271	1	Rod, Fuel Pump Primer, Key 1,2,5,6,8,9 (Repl. 149A648)
43	526-63	2	Washer, Flat Copper, Fuel Pump Mounting
44	502-20	1	Elbow, Street, Filter Brkt., Key 1,3,4,5,7,9,10
46	NIPPLE (1/8 x 3/4") BRASS		
	502-46	1	Bracket to Filter Inlet, Key 1, 3,4,5,7,9,10
	502-46	1	Tank to Filter Inlet, Key 2,6
47	153A227	1	Linkage, Choke, Key 10
48	142-113	1	Swivel, Choke Linkage, Key 10
49	153A223	1	Choke, Key 10
50	153A222	1	Bracket, Choke, Key 10
51	148A428	1	Regulator, Ensign, Gas (Opt.) Plts. with Gas-Gasoline Carb. (Replaces 148A9)
52	505-21	1	Bushing, Reducer(3/4 x 1/2") Ensign Reg. Out. (Optional)
53	501A25	1	Hose, Reg. to Carb. (Optional)
54	503-27	2	Clamp, Hose (Optional)
55	148A107	1	Vent (Optional)
56	148A147	1	Pipe, Fuel (Optional)
57	148C311	1	Regulator, Garretson (Optional)
58	505-17	1	Bushing, Reducer 3/8 – 1/4" Optional
59	505-38	1	Elbow, 1/4" (Optional)
60	505-57	1	Plug, Pipe 1/8" (Optional)
61	505-99	1	Nipple, 1/4 x 7/8" (Optional)
63	505-302	1	Nipple, Half (Optional)
64	415A124	1	Cap, Rain, Dome Type Tank Key 1,3,4,5,7,9,10
	505-8	1	Plug, Pipe, Ensign Gas Reg. (Optional)
	502-2	1	Elbow, Inverted Male, Carb.
	336A1050	1	Lead, Elec. Choke to Cont, Key 3,4,7
	149A117	1	Elbow & Screen Assy., (Tank Outlet) Key 8
	505-57	1	Plug, Tank Drain, Key 2,6
	502-20	1	Elbow, Filter Out., Key 2,6
	332-52	1	Clip, Fuel Line, Key 2,6,8
	149K526	1	Repair Kit, Fuel Pump
	142K371	1	Repair Kit, Carburetor
	142-33	1	Gasket Kit, Carburetor
	148-300	1	Repair Kit, Gas Reg. (Ensign Model F)
	148-522	1	Repair Kit, Gas Reg. (Ensign Model F1
	148-390	1	Repair Kit, Gas Reg. (Garretson)
	148K609	1	Conversion Kit, Gas-Gasoline (Accessory) Key 3,4,7
	148K610	1	Conversion Kit, Gas-Gasoline (Accessory) Key 1,2,5,6,8,9
	148K617	1	Conversion Kit, Gas Only, Key 3,4,7,10

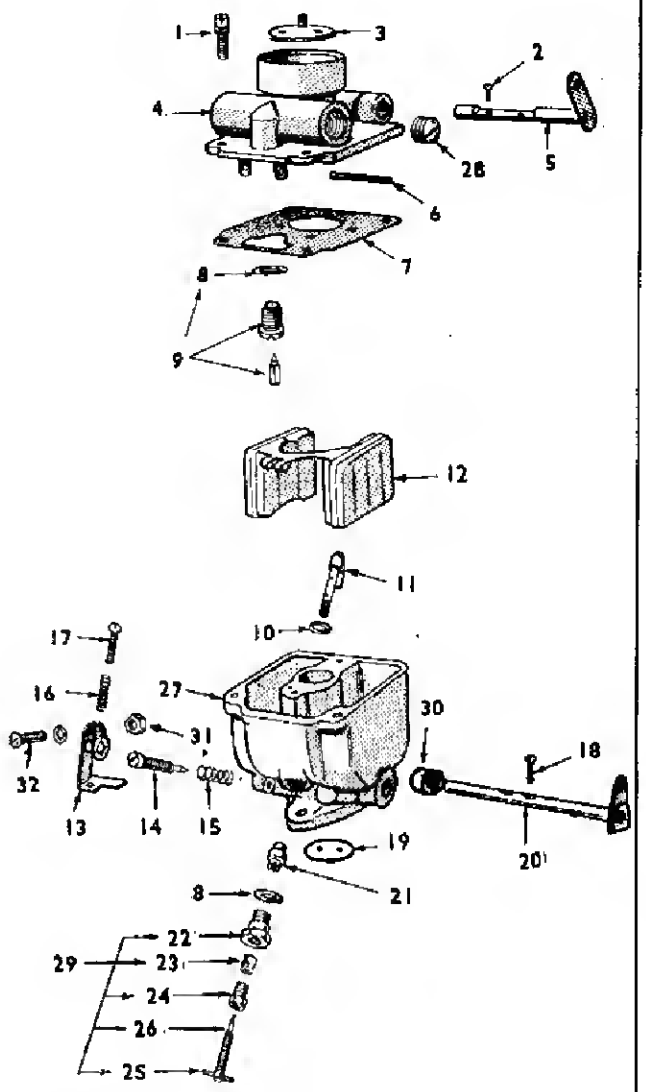


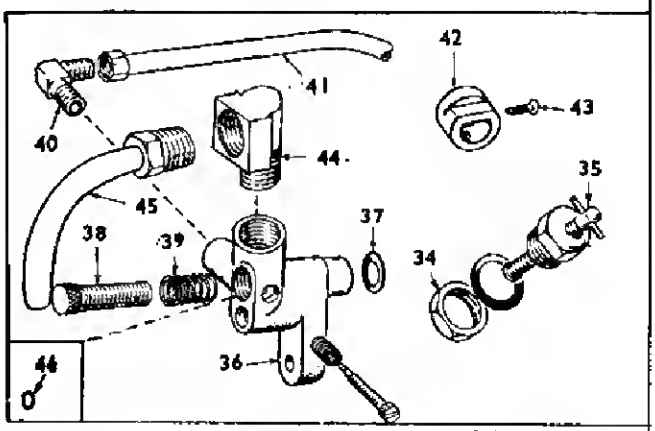
RESERVOIR (DAY) TANK GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	TANK KIT, RESERVOIR (DAY)		
	159K591	1	One Quart
	159K942	1	Two Quart
1	142-356	1	Valve, Fuel, Carb. Fuel Inlet
2	159-41	1	Cap, Vent
	BAND, TANK MOUNTING		
3	159A121	1	Plts. where Mtg. Brkt. Mts. to Control Box (One Quart)
3A	159A556	1	Plts. where Mtg. Brkt. Mts. Under Generator Foot (One Quart)
3A	159A936	1	Plts. where Mtg. Brkt. Mts. Under Generator Foot (Two Quart)
4	TANK, RESERVOIR		
	159B294	1	One Quart
	159B746	1	Two Quart
	BRACKET, RESERVOIR TANK MOUNTING		
5	159B302	1	Mounts to Control Box
5A	159A612	1	Mounts Under Generator Foot
6	415A55	1	Bracket, Vent Cap
7	LINE, FUEL, FLEXIBLE		
	501B5	1	18" Long
	501A7	1	24" Long
8	504-7	1	Valve, Shut-Off
9	505-57	1	Plug, Tank Drain

CARBURETOR PARTS GROUP

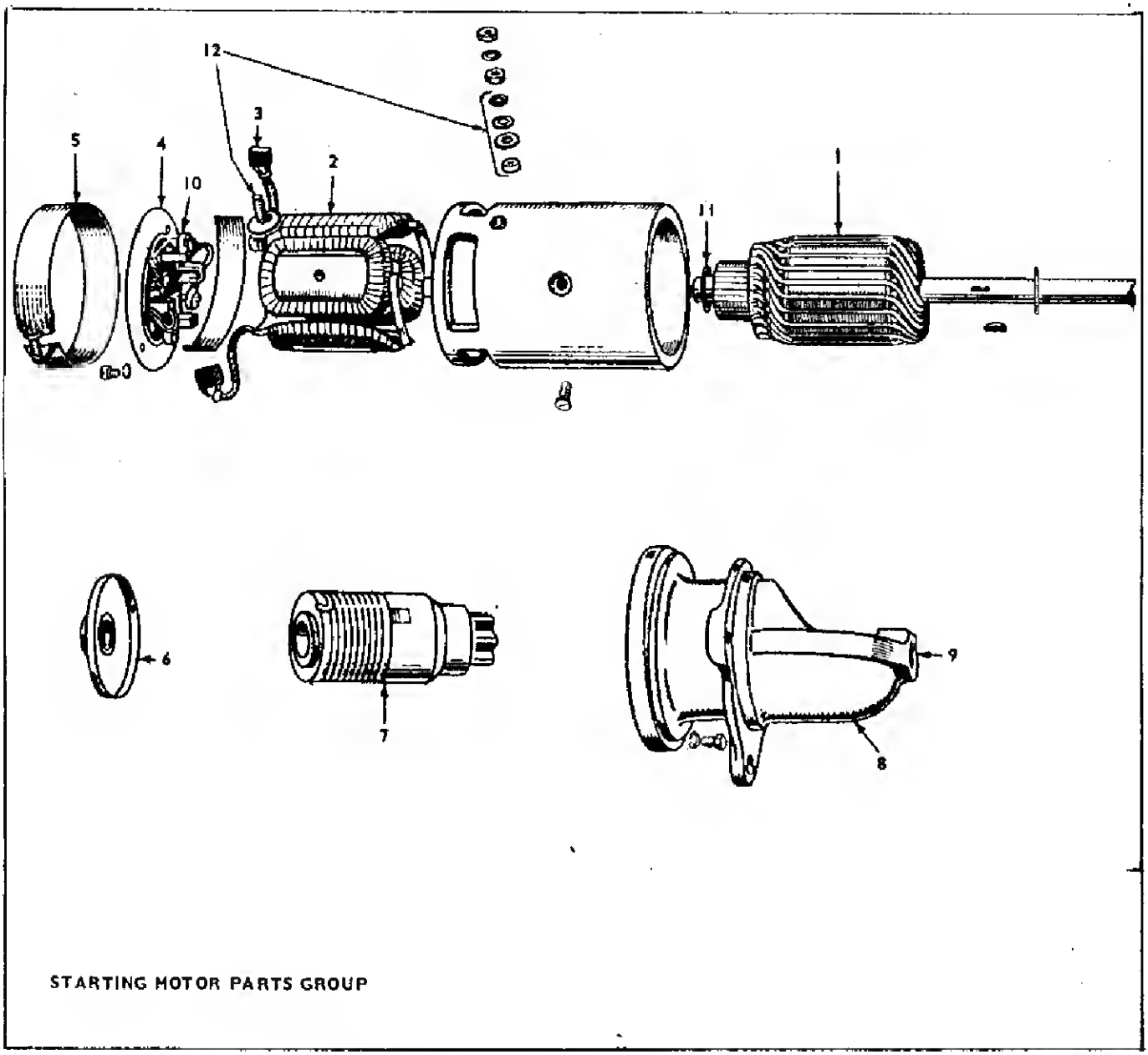
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	CARBURETOR, GASOLINE		
	142A363	1	Key 1,2,5,6,8,9,10
	142A364	1	Key 3,4,7
	CARBURETOR, GAS-GASOLINE (Optional)		
	142C367	1	Key 1,2,5,6,8,9,10
	142C366	1	Key 3,4,7
1	SCREW, BOWL COVER		
	815-103	1	#10-24 x 1/2"
	815-109	2	#10-24 x 5/8"
2	815-91	2	*Screw, Choke Fly (4-40 x 3/16")
3	FLY, CHOKE		
	142-55	1	Key 1,2,5,6,8,9,10
	142-37	1	Key 3,4,7
4	142-205	1	Sleeve Assy., Choke (Cover)
5	SHAFT ASSEMBLY, CHOKE		
	142-217	1	Key 1,2,5,6,8,9,10
	142-183	1	Key 3,4,7
6	142-39	1	*Shaft, Float
7	142-31	1	Gasket, Body to Bowl
8	148A17	2	Gasket, (1) Float Valve Seat, (1) Main Adj. Needle Retainer
9	142-49	1	*Velve & Seat Assy.
10	142-32	1	Gasket, Nozzle
11	142-285	1	Nozzle Assembly
12	142-361	1	Floet & Lever Assy., (Gasoline Mdls.) Repl. 142-38 & 142A325
13	145A8	1	Lever, Idle Stop
14	142-40	1	*Needle, Idle Adjusting
15	142-282	1	Spring, Idle Needle Adj.
16	142A35	1	Spring, Throttle Stop Adj. Screw
17	812-63	1	Screw, Throttle Stop Adj. (#6-32 x 1/2")
18	815-72	2	*Screw, Throttle Fly (#4-40 x 1/4")
19	142-369	1	Fly, Throttle
20	142-368	1	*Shaft Assembly, Throttle Replaces #142A269
21	142-370	1	Nut & Jet, Nozzle
22	142-46	1	Retainer, Main Adj. Needle
23	142-206	1	Packing, Main Adj. Needle
24	142-45	1	Retainer, Mein Adj. Needle Packing
25	516A27	1	Pin, Mein Adj. Needle
26	142A41	1	*Needle, Main Adjusting
27		1	Body Assy. (Not Sold Sep.)
28	505-53	1	Plug, Ges Inlet
29	142-42	1	Needle Assy. (Incl. Pkg., Nut & Retainer)
30	142-343	2	Bushing, Throttle Sheft
31	870-53	1	Nut, Throttle Stop
32	813-102	1	Screw, Throttle Stop Clamp
34	148A38	1	Nut, Hex (3/8-32) Floet Lock Ret. (Gas-Gasoline Mdls.)
35	148A135	1	Lock Assy., Float (Gas-Gasoline Models)
36	148B126	1	Adapter, Carb. (Gas-Gasoline Models)
37	148A22	1	Gesket, Adapter Mtg. (Gas-Gasoline Models)
38	148A131	1	Screw, Adapter Adj. (Ges-Gasoline Models
39	148A10	1	Spring, Adepter Adj. Screw (Gas-Gasoline Models)
40	502-34	1	Elbow, Idle Line to Adapter (Gas-Gasoline Models)
41	149A30	1	Line, Idle Fuel (Gas-Gasoline Models)
42	148A8	1	Lock, Choke (Gas-Gasoline Models) Key 3,4,7
43	518-75	1	Screw, Choke Lock (Gas-Gasoline Models) Key 3,4,7





REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
44	502-74	1	Elbow, Inv., Adapter (Gas-Gasoline Models)
45	PIPE, FUEL, REG. FUEL HOSE TO ADAPTER ELBOW		
	148B633	1	Pressure Cooled Plants
	148A147	1	Vacu. Flo Cooled Plants
46	509-91	1	Seal, "O" Ring
	142-33	1	*Gasket Kit, Carburetor
	142K371	1	Repair Kit, Carb. (Incl. Parts Marked*

* - Parts Contained in Repair Kit #142K371.

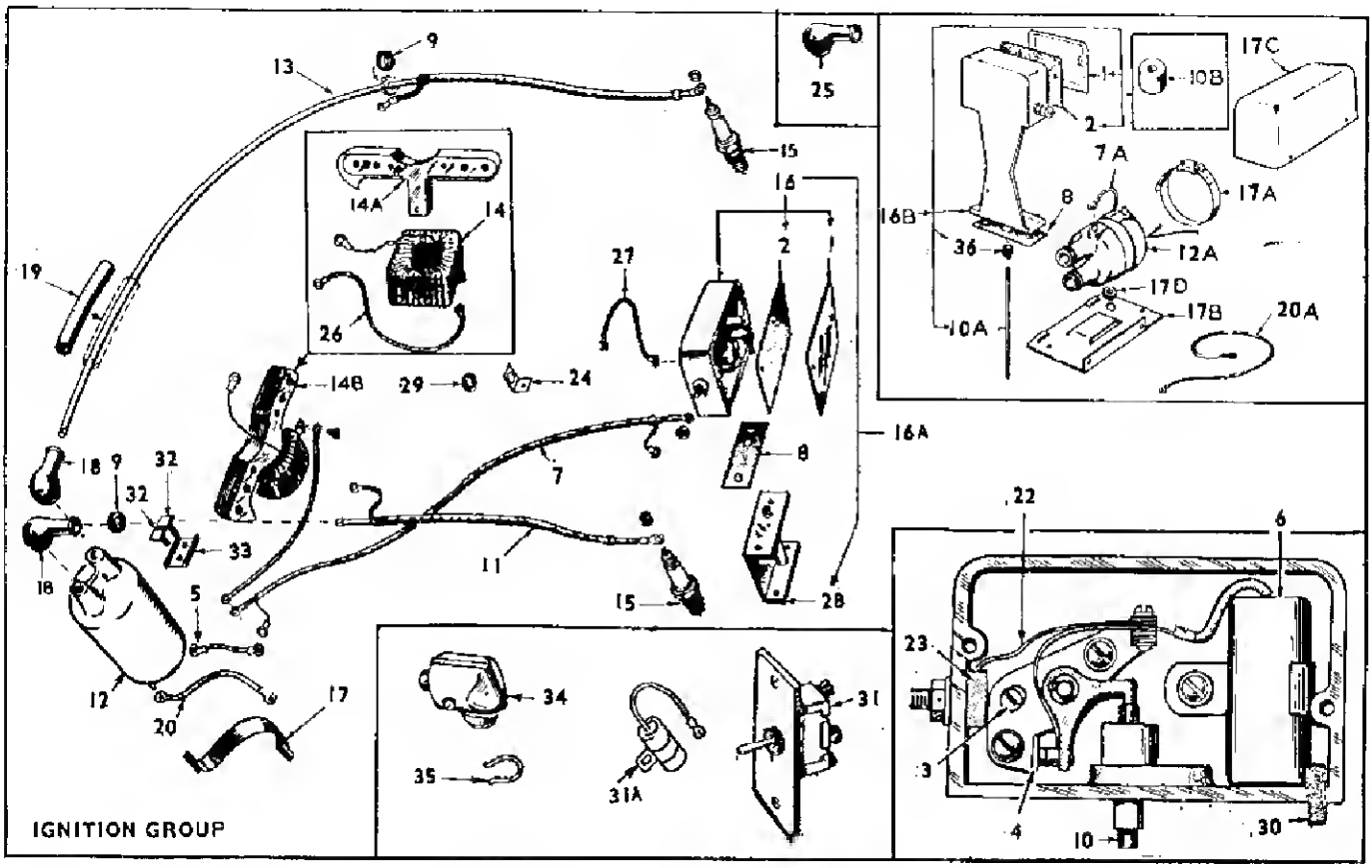


STARTING MOTOR PARTS GROUP

Spec. #. CCJ.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	MOTOR ASSEMBLY, STARTING		
	191C150	1	To Spec J
	191C511	1	Begin Spec J
1	191-S17	1	Armature
2	(P)20-14	1	Coil Assy. Pkg., Field
3	(P)17-14	1	Brush Set, Service
4	(P)19-27	1	Head Assy., Commutator End
5	(P)36-321	1	Band, Cover
6	(P)36-4	1	Bearing Assy., Intermediate
7	191P271	1	Drive Assy., Bendix
8	HOUSING, PINION		
	(P)21-156	1	To Spec J (For 191C150 Start.)
	(P)21-277	1	Begin Spec J (For 191C511 Starter)
9	(P)24-23	1	Bearing, Drive End
10	(P)50-263	1	Spring, Brush (Set of 4)
11	(P)90-263	1	Washer Armature Thrust (pkg.) Use as required.
12	(P)90-333	1	Stud, Terminal (pkg.)

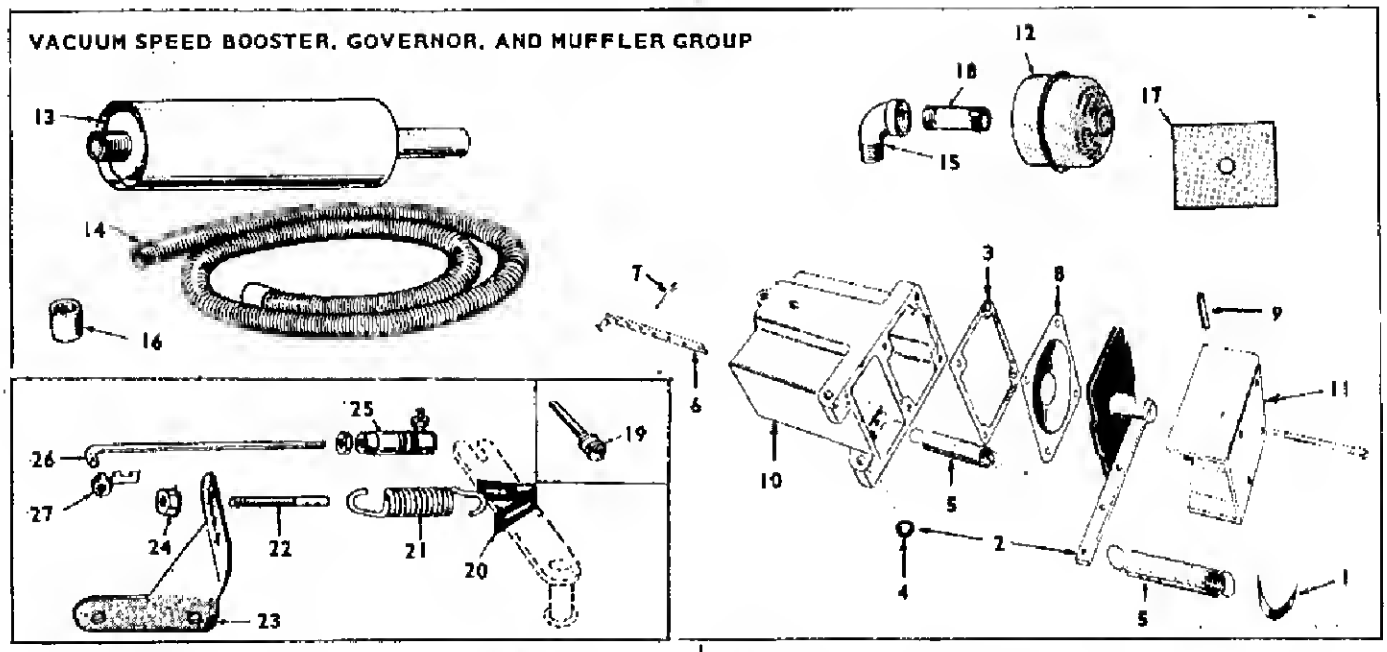
NOTE: Order Prestolite Parts (P) from your nearest Prestolite Dealer, giving part number, full description and Starter Motor Number.



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	160A930	1	Cover, Brkr, Box (Repl. 160A152)
2	160A150	1	Gasket, Brkr. Box Cover
3	160A75	1	Pivot, Breaker Arm
4	160A2	1	Point Set, Breaker
5	LEAD		
	336A330	1	Ignition Coil to Term. Blk. To Spec J
	336A1529	1	Ignition Coil to Cond., Key 3, 4,7,10, Begin Spec J
6	312A69	1	Condenser, Brkr. Box (.3 Mfd. (Replaces 312A63)
7	336A507	1	Lead, Brkr. Box to Term. Blk. (Shielded) To Spec J
7A	336A1528	1	Lead, Brkr. Box to Ign. Coil, Begin Spec J
8	GASKET		
	160A43	1	Breaker Box Mounting
	160A43	1	Breaker Box Spacer Mtg., Key 3,4,7,10, To Spec J
9	508A5	2	Grommet, Spk. Plug Cable (In Blower Hsg) To Spec J
10	PLUNGER ASSY., BREAKER (Includes Plunger, Diaphragm & Guide)		
	160A262	1	Key 1,2,5,6,8,9, To Spec J
	160A268	1	Key 3,4,7,10, To Spec J
10A	160A723	1	Plunger, Breaker, Begin Spec J
10B	160A263	1	Diaphragm, Plunger
11	CABLE, SPARK PLUG, (Shielded) RIGHT		
	167A1112	1	9" (Repl. 167A1307) To Spec J
	167A1467	1	13", Begin Spec J
12	160C792	1	Coil, Ignition (Repl. 160C483) To Spec J
12A	166C346	1	Coil, Ignition, Begin Spec J
13	CABLE, SPARK PLUG(Shielded) LEFT		
	167A1289	1	23", To Spec J
	167A1468	1	21-1/2", Begin Spec J
14	160A282	1	Coil, Magneto Stator, Key 1,2, 5,6,8,9
14A	160A281	1	Pole Shoe, Magneto Stator Key 1,2,5,6,8,9
14B	160K722		Stator Assy., Magneto (Incl. Coil & Pole Shoe) Key 1,2,5, 6,8,9 (Replaces 162A196)
15	167-28	2	Plug, Spark
16	160A257	1	Box Assy., Ign. Brkr, (Complete) Key 1.2.5.6.8.9 To Spec J (Also All Gas & Gas-Gaso. Plts)
16A	160A258	1	Box Assy., Ign. Brkr. (Complete) Key 3,4,7,10, To Spec J
16B	160A963	1	Box Assy., Ign. Brkr. (Complete) Begin Spec J (Except Gas & Gas-Gasoline Plants)
17	160A488	1	Clamp, Ign. Coil, To Spec J
17A	503P458	1	Clamp, Ign. Coil, Begin Spec J
17B	166B383	1	Bracket, Ign. Coil, Begin Spec J
17C	166C385	1	Cover, Ign. Coil, Begin Spec J
17D	508P114	1	Grommet, Ign. Coil Mtg. Brkt. Begin Spec J
18	160A558	2	Nipple, Ignition Coil Rubber
19	503-92	1	Sleeve, Rubber, Spk. Plug Ld.
20	LEAD, COIL TO TERMINAL BLOCK		
	336A1038	1	5", Key 1,2,5,6,8,9, To Spec J
	336A368	1	6", Key 3,4,7,10, To Spec J
20A	336A1330	1	Lead, Coil to Res. in Con. Box Key 3,4,7,10, Begin Spec J
22	160A428	1	Strap, Point Set to Brkr. Box Terminal Block
23	332A349	1	Block & Term., Breaker Box
24	332A273	1	Clamp Mag. Ld., Key 1,2,5,6,8,9
25	166P250	2	Cover, Spk. Plug (Opt.)
26	LEAD, STATOR TO BREAKER BOX, KEY 1,2,5,6,8,9		
	336A521	1	To Spec J
	336A535	1	Begin Spec J
27	336A439	1	Lead (Grd.) Brkr. Box to Man.
28	160A246	1	Spacer, Brkr. Box, Key 3,4,7, 10 - To Spec J

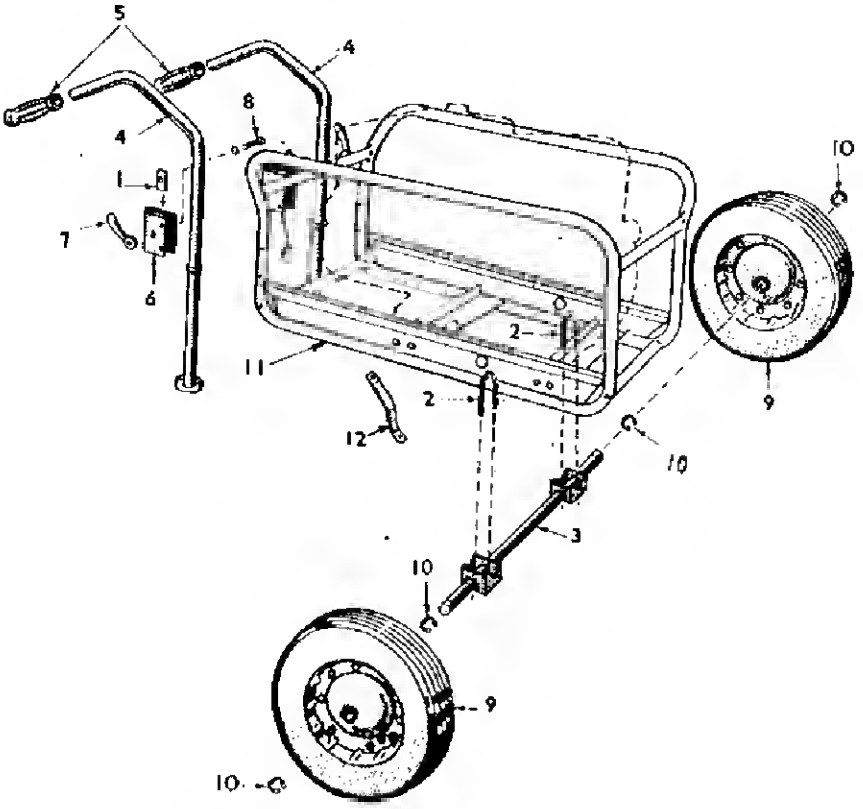
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
29	508A2	1	Grommet, Stator Ld., Key 1,2, 5,6,8,9
30	160A261	1	Wick, Brkr. Box,
31	308A165	1	Switch, Remote Start-Stop (Optional) Key 3,4,7
31A	CONDENSER (.1 MFD.) IGNITION COIL SUPPRESSION KEY 3,4,7,10		
31A	312A15	1	To Spec J
	312A162	1	Begin Spec J
32	332A284	2	Screw, Term. Blk. Mtg., On Bl. Housing. To Spec J
33	332A272	1	Block, Term., On Bl. Hsg., To Spec J
34	167A67	2	Shield, Spk. Plg., (Incl. Clp. & Shield)
35	167A64	2	Clamp, Spark Plug Shield
36	160A929	1	Bushing, Brkr. Box, Begin Spec J
	815-111	1	Screw, Fill. Hd. (1/4-20 x 5/8") Brkr. Box Mtg., To Spec J
	815-112	1	Screw, Fill. Hd. (1/4-20 x 3/4") Brkr. Box Mtg., To Spec J
	815-269	2	Screw, Phillips Fill. Hd. (1/4-20 x 3/4) Brkr. Box Mtg., Begin Spec J
	526-201	2	Washer, Flat, Brkr. Box Mtg., Begin Spec J
	850-38	2	Lockwasher, Brkr. Box Mtg., Begin Spec J
	815-193	2	Screw, (1/4-20x 1-3/8") Stator Mtg., Key 1,2,5,6,8,9
	812-59	1	Screw (#6-32 x 1/4") Stator Primary Ld., Key 1,2,5,6,8,9
	812-153	1	Screw (1/4-20 x 1") Ign. Coil To Spec J
	160C764	1	Bracket, Coil Mtg. (Used only where coil is on LH side of gen. (optional) To Spec J
	160C763	1	Bracket, Coil Mtg. (Used only where coil is on RH side of gen. (optional) To Spec J

VACUUM SPEED BOOSTER, GOVERNOR, AND MUFFLER GROUP



REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	150K433	1	Kit, Vac. Spd. Booster Repl., Incl. Ext. Sprg. & Mtg. Gskt.
1	150A430	1	Brackt, Sprg. to Gov. Link
2	150K434	1	Kit, Diaph. Repl., Incl. Gskts.
3	150A668	1	Gasket, Diaph. Plate (Repl. 150A374
4	150A425	1	Gasket, Booster to Manifold
5	150A366	2	Spring, Internal & External
6	150A376	1	Bracket, Internal Sprg. Adj.
7	516-39	1	Pin, Cotter (3/32 x 5/8") Adj. Bracket
8	150A666	1	Plate, Diaphragm (Replaces 150A373)
9	516A85	1	Pin (3/32 x 3/4") Diaph. Lever Pivot
10		1	Housing, Vac. Booster (Not Sold Separately)
11		1	Cover, Vac. Booster Hsg. (Not Sold Separately)
12	155B484	1	Muffler, Exh., Key 2,6,8
13	155B76	1	Muffler, Exh., Key 1,3,4,5,7, 9,10
14	155B127	1	Tubing, Flex. Exh. (Incl. Coup.) Key 1,3,4,5,7,9,10
15	505-333	1	Elbow, St., Exh. Outlet, Key 2,6,8
16	505-30	1	Coupling (Pipe 1") Exh., Key 1,3,4,5,7,9,10
17	155A295	1	Plate, Exh. Wall, Key 3,4,7,10
18	505-4	1	Nipple (Pipe Close) Exh. (1-1/2 x 1-1/2") Key 2,6,8
19	150A136	1	Screw, Gov. Sensitivity Adj. To Spec D
20	150A678	1	Clip, Gov. Sensitivity Adj.
21	150A98	1	Spring, Governor
22	150A96	1	Stud, Gov. Speed Adj.
23	150A40	1	Bracket, Governor Spring
24	870-131	1	Nut, Keps, Gov. Speed Adj.
25	150A639	1	Joint, Gov. Link Ball
26	150A629	1	Link, Gov. Arm to Carb. (Note: If old link fastens by a cotter pin, use also Clip #518-6.)
27	518-6	1	Clip, Rod End, Begin Spec C

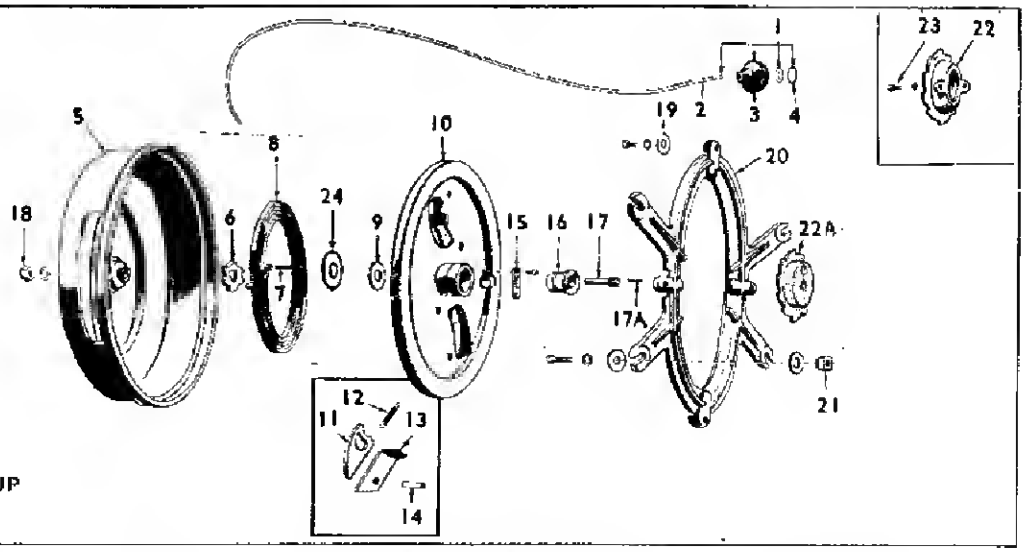
NOTE: Ref. 1 through 11 for Key 1,2,3,4,5,6,7.



CARRYING FRAME AND DOLLY GROUP (Portable Plants)

NOTE: Optional Equipment for Key 2,6,8.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	410C235	1	Dolly Assembly, Complete
1	410A238	2	Lock, Handle
2	410C148	2	Bolt, "U"
3	410B233	1	Axle, Dolly
4	410B147	2	Handle, Dolly
5	403-205	2	Grip, Handle
6	410B179	2	Channels, "U"
7	406-62	2	Nut, Handle
8	800-52	2	Bolt, Wedge (Repl. 410A158)
9	410P236	2	Wheel & Tire Assy. (16 x 4.00)
10	518-130	4	Ring, "E" Ret., Wheel to Axle
11	403C406	1	Frame, Carrying (Replaces 403C370) Std. for Key 2,6,8
12	337A56	1	Strap, Ground, Std. for Key 2,6,8



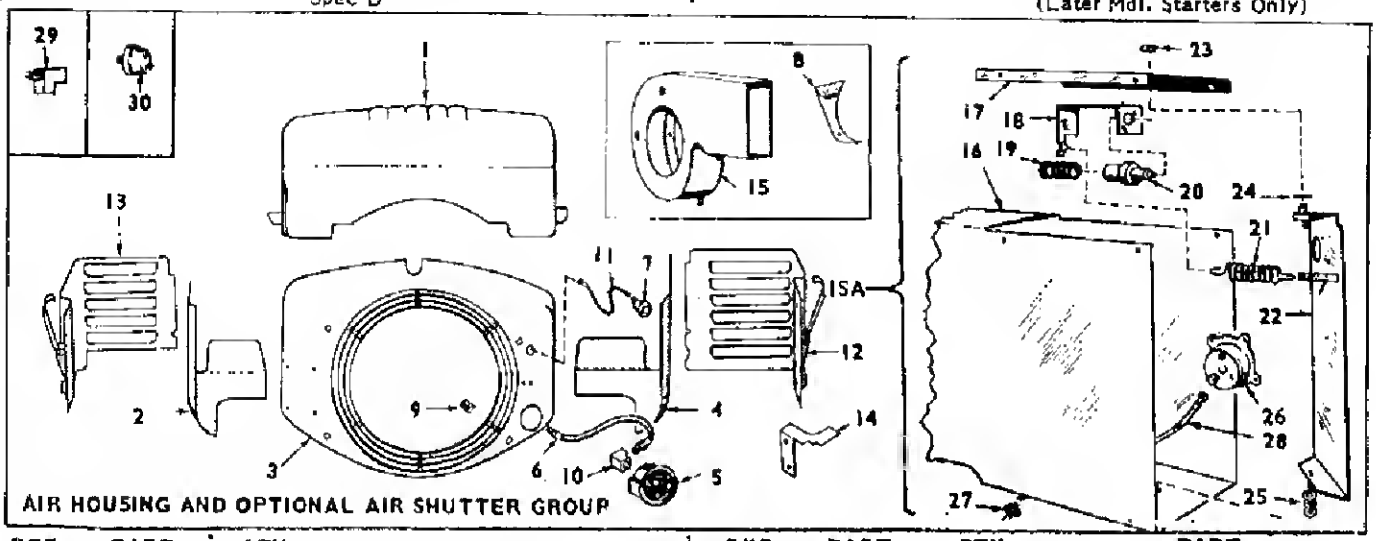
READI-PULL STARTER GROUP

NOTE: For Key 1,2,5,6,8,9

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	STARTER KIT - COMPLETE - INCL. MTG. RING & RATCHET WHEEL		
	192K215	1	To Spec D
	192K325	1	Begin Spec D
1	192A45	1	Rope & Grip Assembly
2	192A43	1	Rope, Starter, Less Grip (83")
3	192A44	1	Grip, Starter Rope - Rubber
4	517A25	1	Plug, Starter Rope Grip
5	192C152	1	Cover, Starter
6	192A153	1	Wheel, Cog-Anti-Backlash

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
7	516-138	1	Pin(3/16 x 5/8") Recoil Sprg.
8	192A39	1	Spring, Recoil
9	526A123	1	Washer, Thrust (Sheave Bush. to Cover)
10	192B180	1	Sheave, Rope
11	192A172	2	Pawl
12	192A165	2	Spring, Pawl
13	192A168	2	Arm, Ratchet
14	516-110	4	Pin, Roll (5/10 x 1/2") (2) Ratchet Arm, (2) Pawl
15	192A167	1	Clamp, Rope
16	192A163	1	Bearing, Sheave Hub (Bronze)
17	192A323	1	Capscrew (3/8-16 x 1-1/2") Sheave Bushing to Cover Replaces 802-74
17A	516-132	1	Pin, Spirol, Locating, Begin Spec D

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
18	870-138	1	Nut, Bushing to Cover Screw
19	WASHER, FLAT		
	526A21	4	Starter to Mounting Ring
	526A21	1	Starter Rope Grip
20	192C186	1	Ring, Starter to Blower Hsg. Mounting
21	870-110	4	Nut, Spd. Grip, Starter Ring to Blower Housing
	WHEEL, RATCHET		
22	192A170	1	To Spec D
22A	192B309	1	Begin Spec D'
23	192A218	2	Capscrew(Socket Hd.) Ratchet Wheel to Flywheel, To Spec D
24	526-168	1	Washer Recoil Sprg. Ret. (Later Mdl. Starters Only)

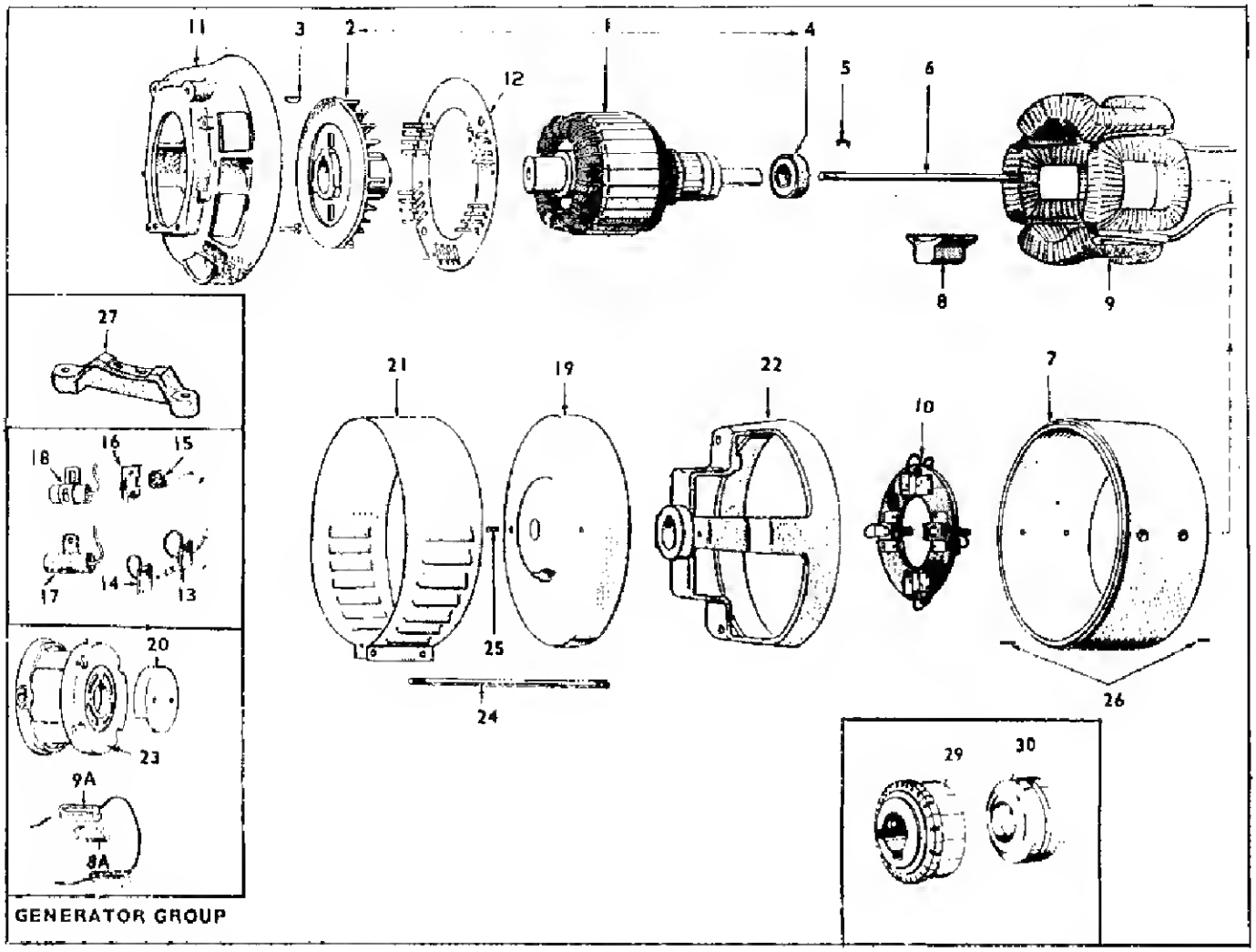


AIR HOUSING AND OPTIONAL AIR SHUTTER GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	HOOD, ENGINE		
	405C1014	1	Key 1,2,5,6,8,9,10 (Replaces 405C963
	405C1013	1	Key 3,4,7 (Repl. 405C960)
2	134D589	1	Housing, Cyl. Air, Left (#1 Cyl.)
3	HOUSING, BLOWER		
	134D569	1	Press. Cooled Plts. Key 1,2,3, 4,5,6,7,8,9 To Spec J
	134D1566	1	Press. Cooled Plts. Key 1,2,3, 4,5,6,7,8,9 Begin Spec J
	134D594	1	Vacu-Flo Cooled Plts. Key 3, 4,7 To Spec J
	134D1572	1	Vacu-Flo Cooled Plts, Key 3, 4,7, Begin Spec J
	134D705	1	Key 10, To Spec J
	134D1574	1	Key 10, Begin Spec J
4	HOUSING, CYL. AIR, RIGHT (#2 CYLINDER)		
	134D588	1	Key 1,2,3,4,5,6,7,8,9
	134D674	1	Key 10
5	193P5	1	Gage, Oil Pressure
6	501A4	1	Line, Flexible Oil
7	313P18	1	Button, Stop, Key 1,2,5,6,8,9
8	160B500	1	Bracket, Ign. Timing (Vacu-Flo Cooled Plants) Key 3,4,7 To Spec D
9	NUT, SPEED GRIP		
	870-110	4	Key 1,2,5,6,8,9 (Readi-Pull Starter Mounting)
	870-110	4	Vacu-Flo Cooled Plts., Key 3, 4,7 (Air Scroll Mtg.)
10	502-5	1	Elbow, Inverted Female, Oil Gage
11	LEAD, STOP		
	336A491	1	Key 1,2,5,6,8 (3") To Spec J

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	336A1534	1	Key 1,2,5,6,8,9, Begin Spec J
	336A1049	1	Key 3,4,7
	336A1037	1	Vacu-Flo Cooled Plts., Key 3,4,7
12	134C662	1	Cover, Cyl. #2, Right (Note: Not used on Vecu-Flo Cooled Plants) Replaces 405C954
13	134D663	1	Cover, Cyl. #1, Left (Note: Not used on Vecu-Flo Cooled Plants) Replaces 405C955
14	134B670	1	Baffle, Air, Right Cyl. Air Hsg. Key 10
15	134D564	1	Scroll, Air (Vacu-Flo Cooled Plants) Key 3,4,7
15A	134C816	1	Shutter Assy., Discharge Air (Optional on Vecu-Flo Cooled Plants) Key 3,4,7, Incl. Parts Marked **
16	134D815	1	**Scroll, Air Duct (With Prov. for Air Shutter)
17	134B661	1	**Plate, Vernetherm Element Mtg.
18	134B660	1	**Bracket, Vernatherm Element
19	134A656	1	**Spring, Vernatherm Element
20	309P85	1	**Element, Vernetherm
21	134A658	1	**Spring, Shutter
22	134A655	1	**Shutter, Circuleted Air Control
23	518P74	1	**Ring, Ext. Ret., Shutter Shaft
24	526-102	1	**Washer (Large) Shutter Spacing
25	526-16	3	**Washer (Small) Shutter Spacing
26	309A2	1	**Switch, Hi-Temp. Cut-Off
27	508-31	1	**Grommet, Rubber
28	336A1252	1	**Lead, Hi-Temp. Cut-Off Switch
29	309-10	1	Switch, Low Oil Press. (Dpt.)
30	502-58	1	Tee, Oil Line (Dpt.)

** - Parts contained in Shutter Assembly.



GENERATOR GROUP

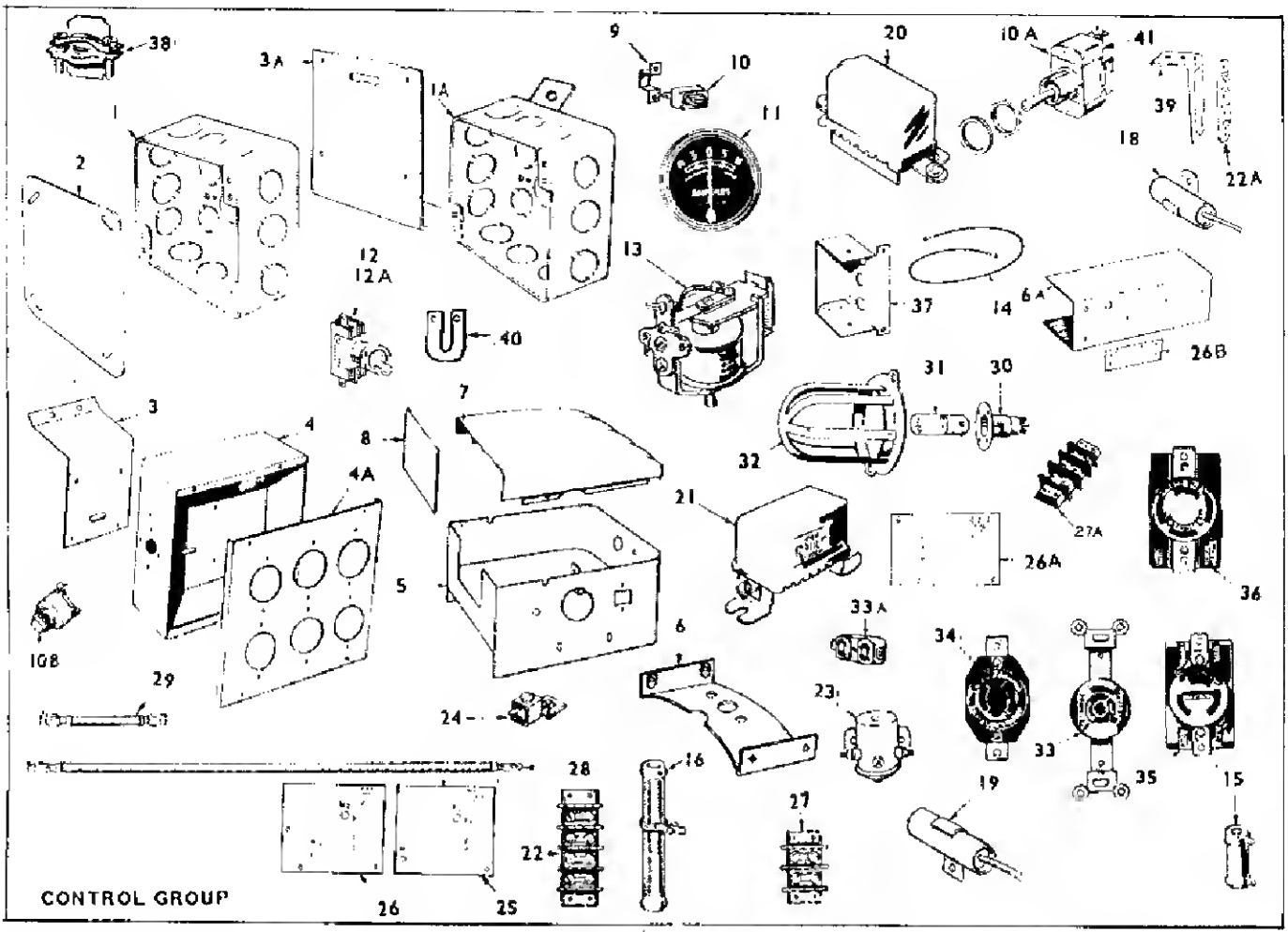
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	*	1	Armature Assy. (Incl. Brg. & Blower)
2	205C53	1	Blower, Generator
3	515-6	1	Key, Blower to Crankshaft
4	510A47	1	Bearing (Ball) Armature
5	232A596	1	Clip, Bearing Stop
6	STUD, ARMATURE THROUGH		
			Key 1,2,3
	520A491	1	120-V or 240-V, 1-Ph. (7/16 x 14-1/2")
	520A525	1	120/240-V, 1-Ph. (Reconnectible and Non-Reconnectible) & all 3-Ph. (7/16 x 15-7/8")
			Key 4,5,6,7
	520A407	1	120-V or 240-V, 1-Ph. (7/16 x 17-3/4")
	520A595	1	120/240-V, 1-Ph. (Reconnectible and Non-Reconnectible) & all 3-Ph. (7/16 x 19-1/2")
			Key 8,9,10
	520A491	1	To Spec D (7/16 x 14-3/8")
	520A534	1	Begin Spec D (7/16 x 16-3/8")
7	FRAME ONLY, GEN. (Machined & Drilled, Less Coils & Pole Shoes)		
	210D244	1	Key 1,2,3
	210B238	1	Key 4,5,6,7
			Key 8,9,10
	210D277		To Spec D
	210D309	1	Begin Spec D

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
8	SHOE, POLE, FIELD		
	221A91	4	Key 1,2,3 (4-1/2")
	221A90	4	Key 4,5,6,7 (7-1/2")
			Key 8,9,10
	221B56	4	To Spec D (4-1/2")
	221B130	4	Begin Spec D (5")
8A	SHOE, INTERPOLE, KEY 8,9,10		
	221A47	2	To Spec D
	221A129	2	Begin Spec D
9	*	1	Coil Assy., Field (Set of 4 Coils)
9A	COIL ASSEMBLY, INTERPOLE (Set of 2 Coils)		
			Key 8
	222A1498	1	To Spec D
	222A1540	1	Begin Spec D
			Key 9,10
	222A1278	1	To Spec D
	222A1546	1	Begin Spec D
10	BRUSH ASSEMBLY, BRUSH		
			Key 1,2,3,4
	212C294	1	120-V or 240-V, 1-Ph. (Repl. 212C225)
	212C295	1	120/240-V, 1-Ph. (Replaces 212C224)
	212C298	1	120/208-V, 3-Ph. 120/240-V 1-Ph., Reconnectible (Repl. 212C234)
	212C297	1	240-V, 3-Ph. (Repl. 212C235)
			Key 5,6,7
	212C293	1	120-V, 1-Ph. (Repl. 212C223)
	212C294	1	240-V, 1-Ph. (Repl. 212C225)
	212C295	1	120/240-V, 1-Ph.

* - Order by Description, giving complete model, Spec. and Serial number.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	212C298	1	120/208-V, 3-Ph, & 120/240-V 1-Ph., Reconnectible (Repl. 212C234)
	212C297	1	240-V, 3-Ph. (Repl. 212C235)
			Key 8
	212C236	1	To Spec D
	212C237	1	Begin Spec D
			Key 9,10
	212C236	1	To Spec D
	212C243	1	Begin Spec D
11	231B1006	1	Adapter, Gen. to Eng. (Repl. 231B1005)
12	232B1256	1	Scroll, Air Baffle
13	BRUSH, COMMUTATOR		
			Key 1,2,3,4,5,6,7
	214A61	4	120-V or 240-V, 1-Ph. 120/240-V, 1-Ph. & 240-V, 3-Ph.
	214A30	4	To Spec J
	214A61	4	Begin Spec J
	214A61	4	120/208-V, 3-Ph., & 120/240-V, 1-Ph., Reconnectible
			Key 8
	214A48	4	To Spec D
	214A65	4	Begin Spec D
			Key 9,10
	214A48	4	To Spec D
	214A66	4	Begin Spec D
14	BRUSH, COLLECTOR RING		
			Key 1,2,3,4
	214A50	4	120-V or 240-V, 1-Ph. 120/240-V, 1-Ph.
	214A62	3	To Spec J
	214A56	3	Begin Spec J
	214A56	4	120/208-V, 3-Ph. & 120/240-V, 1-Ph. Reconnectible 240-V,3-Ph.
	214A32	3	To Spec J
	214A50	3	Begin Spec J
			Key 5,6,7
	214A56	4	120-V, 1-Ph. & 120/240-V, 1-Ph., Reconnectible
	214A50	4	240-V, 1-Ph. 120/240-V, 1-Ph.
	214A62	3	To Spec J
	214A56	3	Begin Spec J
	214A56	4	120/208-V, 3-Ph. 240-V, 3-Ph.
	214A32	3	To Spec J
	214A50	3	Begin Spec J
15,16	SPRING, COMMUTATOR BRUSH		
			Key 1,2,3,4,5,6,7
			To Spec J
	212B1105	4	120-V or 240-V, 1-Ph. 120/240-V, 1-Ph., Reconnectible & 120/208-V, 3-Ph. (Ref. 16)
	212A1003	4	120/240-V, 1-Ph. & 240-V 3-Ph. (Ref. 15)
	212B1105	4	Begin Spec J (Ref. 16)
			Key 8,9,10
	212B1011	4	To Spec D (Ref. 15)
	212B1105	4	Begin Spec D (Ref. 16)
15,16	SPRING, COLLECTOR RING BRUSH		
			Key 1,2,3,4,5,6,7
	212B1105	4	120-V or 240-V, 1-Ph. (Ref. 16) 120/240-V, 1-Ph. & 240-V, 3-Ph.
	212A1004	3	To Spec J (Ref. 15)
	212B1105	3	Begin Spec J (Ref. 16) 120/208-V, 3-Ph. & 120/240-V, 1-Ph., Reconnectible
	212A1123	4	To Spec J (Ref. 16)
	212B1105	4	Begin Spec J (Ref. 16)

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
17	CONDENSER (.5 MFD.) DC		
			Key 1,2,3,4,5,6,7
	312A17	1	120-V or 240-V, 1-Ph.
	312A27	1	120/240-V, 1-Ph. (Reconnectible & Non-Reconnectible) & all 3-Ph.
	312A17	1	Key 8,9,10
18	CONDENSER (.1 MFD.) AC		
			Key 1,2,3,4,5,6,7
	312A58	1	120-V or 240-V, 1-Ph.
	312A58	2	120/240-V, 1-Ph.
	312A58	3	120/240-V, 1-Ph., Reconnectible & all 3-Ph.
19	COVER, END BELL		
	211C99	1	Key 1,2,3,4,5,6,7
	211C99	1	Key 8,9,10, Begin Spec D
20	232A518	1	Cover, Air Intake, Key 8,9,10 To Spec D
21	BAND, END BELL		
			Key 1,2,3,4,5,6,7
	234C2	1	120-V or 240-V, 1-Ph.
	234C5	1	120/240-V, 1-Ph. (Reconnectible & Non-Reconnectible) & all 3-Ph.
			Key 8
	232B284	1	To Spec D
	234C68	1	Begin Spec D
			Key 9,10
	232B202	1	To Spec D
	234C40	1	Begin Spec D
22	BELL, END		
			Key 1,2,3,4,5,6,7
	211D97	1	120-V or 240-V, 1-Ph.
	211D98	1	120/240-V, 1-Ph. (Reconnectible & Non-Reconnectible) & 240-V, 3-Ph.
	211D98	1	120/208-V, 3-Ph.
			Key 8,9,10
	211D97	1	Begin Spec D
23	211D53	1	To Spec D
24	STUD, GENERATOR THROUGH		
	520A502	2	Key 1,2,3 (5/16 x 12-3/16")
	520A498	2	Key 4,5,6,7 (5/16 x 15-11/16)
			Key 8,9,10
	520A500	2	To Spec D (5/16 x 13-13/16")
	520A161	2	Begin Spec D (5/16 x 14-1/4")
25	815-48	2	Screw, Rd. Hd. Self Tapping (#10-32 x 3/8") End Bell Cover Mtg., Key 1,2,3,4,5,6,7 (Note: Key 8,9,10 Begin Spec D)
26	S16-103	2	Pin (Roll) Gen. Frame - 1/8 x 1/2"
27	SUPPORT, GENERATOR		
			Key 1,2,5,6,8
	232C1276	1	To Spec D
	232C1257	1	Begin Spec D
	232C1257	1	Key 3,4,7,9,10
28	COMMUTATORS (DC)		
			Key 1, 2, 3
	203A8	1	50-Cycle
	203A9	1	60-Cycle
	203A127	1	Key 4, 5, 6, 7
	203A134	1	Key 8
	203A130	1	Key 9, 10
29	COLLECTOR RING (AC) KEY 1,2,3,4,5,6,7		
	204A9	1	120-V and 240-V, 1-ph.
	204A10	1	120/240-V (Non-Reconnectible) 1-ph., and 240-V, 3-ph.
	204A92	1	120/240-V (Reconnectible) 1-ph., 120/208-V, 3-ph., 127/220-V, 3-ph., and 220/380-V, 3-ph.

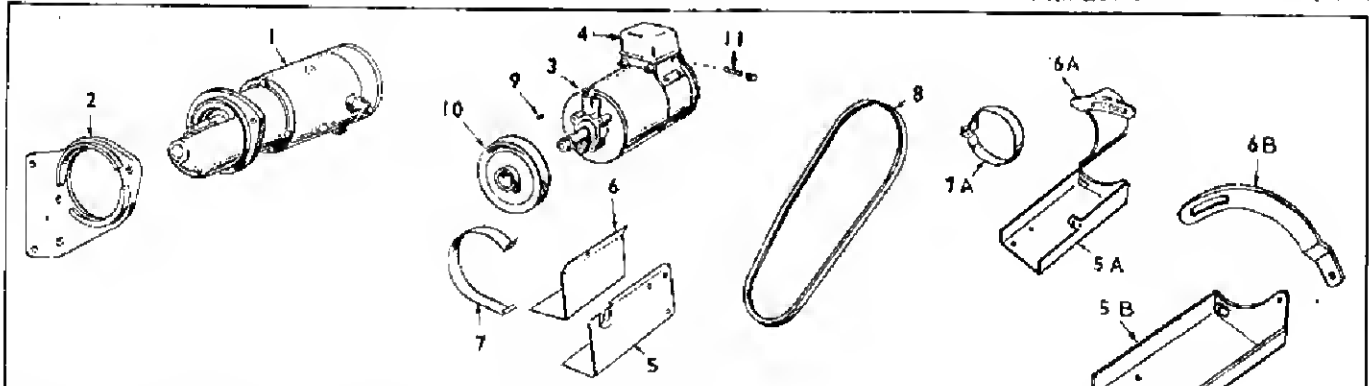


REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	BOX, JUNCTION		
	[illegible]-28	1	Key 1,5
	[illegible]-28	1	Key 9,10 To Spec D
1A	308B47	1	Box, Junction, Begin Spec D (Includes Bracket)
2	230-6	1	Cover, Junc. Box, Key 1,5,9,10
	BRACKET, BOX MOUNTING		
3	301C1277	1	Key 1,5 (Mtg. Junction Box)
	301C1277	1	Key 8 (Mtg. Recept. Box)
3A	301C1276	1	Bracket, Mounting, Key 2,6 (Mounting Receptacle Box)
4	BOX, RECEPTACLE		
	301C2112	1	Key 2,6
	301C1517	1	Key 8
4A	PANEL, RECEPTACLE BOX		
			Key 2,6
	301B525	1	1-Ph., To Serial 683612
	301B1755	1	1-Ph., Begin Serial 683612
	301B1265	1	3-Ph.
	301B525	1	Key 8, To Serial 683612
	301B1755	1	Key 8, Begin Serial 683612
5	BOX, CONTROL (Incl. Panel & Res. Brkt.) KEY 3,4,7		
	301C1160	1	All Except 120/240-V, 1-Ph., Reconnectible
	301C1482	1	120/240-V, 1-Ph. Reconnect.
6	301B1198	1	Bracket, Cont. Mtg., Key 3,4,7
6A	301C1494	1	Bracket, Cont. Mtg., Key 10
7	COVER, CONTROL BOX		
	301C202	1	Pressure Cooled Plts., Key 3, 4,7
	301C1244	1	Vacu-Flo Cooled Plants, Key 3,4,7
8	301B1271	1	Plate, Cont. Box End, Vacu-Flo Cooled Plts., Key 3,4,7

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
9	301A974	1	Bracket, Start-Stop Switch, Key 3,4,7 (Used with old type Switch Only)
10	308A166	1	Switch, Start-Stop (Incl. Mtg. Plate) Key 3,4,7, To 2-10-61
10A	308P154	1	Switch, Start-Stop, Begin 2-10-61
10B	308A29	1	Button, Start, Key 10
11	302A58	1	Ammeter, Charge, Key 3,4,7
12	308-2	1	Switch, Toggle (Manual-Elec. Start) Key 3,4,7
12A	308-69	1	Switch, Ignition, Key 10
13	307B253	1	Relay, Stop, Key 3,4,7
14	LEAD, WIRE		
	336A1124	1	Key 10 (Optional) Batt. Chg. Gen. to Start Solenoid)
	336A1136	1	Key 10, Choke to Start Sol.
15	RESISTOR, FIXED		
	304A251	1	Key 3,4,7 (30-Ohm, 5-Watt)
	304A344	1	Key 3,4,7 (1-Ohm, 25-W) 3/4 x 2
	304A60	1	Key 3,4,7,10 (1.72-Ohm, 25-W) 9/16 x 2 (Ignition)
16	RESISTOR, ADJUSTABLE		
	304A175	1	Key 3,4,7 (1-Ohm) 3/4 x 4"
	304A180	1	Key 8 (60-Ohm, 50-W) 3/4 x 4"
18	CONDENSER (0.1 Mfd.) LOAD TERMINAL SUPPRESSION, KEY 3,4,7		
	312A58	1	120-V or 240-V, 1-Ph.
	312A58	2	120/240-V, 1-Ph.
	312A58	3	120/208-V, 3-Ph.
	312A58	3	240-V, 3-Ph.
	312A58	3	120/240-V, 1-Ph, Reconnect.
19	312A57	1	Condenser (1. Mfd.) Start Sol. Suppression, Key 3,4,7

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
20	30SA1	1	Regulator, Volt., (Charge Circuit) Key 3,4,7
21	307B180	1	Relay, Rev. Current, Key 3,4,7
22	332A537	1	Block, Term. Remote Cont., Key 3,4,7, All except 120/240-Volt, 1-Ph., Reconnectible
22A	332A222	1	Block, Term., Remote Cont., Key 3,4,7, 120/240-V, 1-Ph. Reconnectible
23	SOLENOID, START		
	307B40	1	Key 3,4,7
	307P367	1	Key 10
24	332-142	As Req.	Terminal, Solderless
25	332A540	1	Strip, Marker (Load Terminal) Key 3,4,7, 120-V or 240-V, 1-Ph.
26	332A539	1	Strip, Marker (Load Terminal) Key 3,4,7, 120/240-V, 1-Ph.
26A	STRIP, MARKER (LOAD TERMINAL) KEY 3,4,7		
	332A558	1	120/208-V, 3-Ph.
	332A541	1	240-V, 3-Ph.
26B	STRIP, MARKER		
	332A435	1	Key 3,4,7 (Load Terminal 120/240-V, 1-Ph., Reconnect.
	332A426	1	Key 10 (Ignition)
27	332A231	1	Block, Terminal (2-Place) Key Key 3,4,7, 120/240-V, 1-Ph.
27A	BLOCK, TERMINAL		
	332A236	1	Key 3,4,7, 3-Ph. (3-Place)
	332A254	1	Key 3,4,7, 120/240-V, 1-Ph. Reconnectible
	332A406	1	Key 10 (3-Place) Ignition
28	416A77	2	Cable, Battery (28") Key 3,4,7
29	416A4	1	Cable, Battery Jumper, Key 3,4,7

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
30	322P21	1	Receptacle, Pilot Lamp, Key 2,6,8
31	LAMP, PILOT		
	322-11	1	Key 8
	322-11	1	Key 2,6
	322-11	1	120-V or 120/240-V, 1-Ph. 120/240-V, 3-Ph.
	322-59	1	240-V, 1-Ph., 240-V, 3-Ph.
32	322A22	1	Guard, Pilot Lamp, Key 2,6,8
33	323P195	4	Receptacle, Twistite, Key 2 (1/Ph.), 6 (1-Ph.), 8, To Serial 683612
33A	323P184	2	Receptacle, Duplex, Key 2 (1-Ph.), 6 (1-Ph.), 8, Begin Serial 683612
34	323P23	2	Receptacle, Twistlock, Key 2,6 (120-V or 240-V, 1-Ph.) & Key 8
35	RECEPTACLE, TWISTLOCK Key 2,6		
	323-11	2	120/240-V, 1-Ph.
	323-11	3	3-Ph.
36	323P91	3	Receptacle, Twistlock, 3-Ph.
37	301B482	1	Box, Resistor Mtg., Key 8
38	331-27	1	Connector, Load Conductor Key 1,2,5,6
39	332A198	1	Bracket, Mtg. (Remote Cont. Term. Block) Key 3,7 (120/240 V, 1-Ph., Reconnectible
40	332A439	1	Jumper, Load Term. Block, Key 3,7 (120/240-V, 1-Ph., Reconnectible)
41	308-97	1	Switch, Momentary Contact - Used with Low Oil Press. Switch (Opt.)



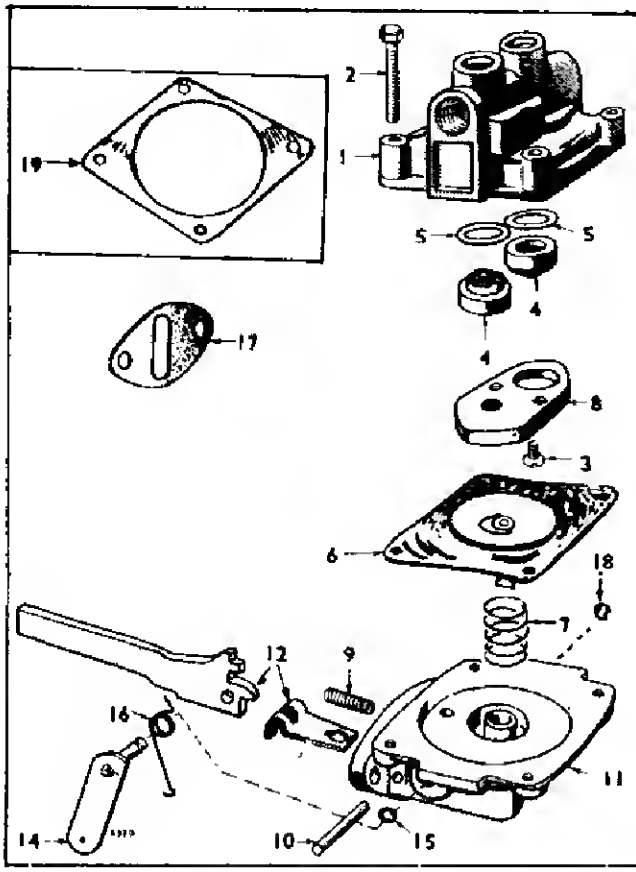
BATTERY CHARGE GENERATOR AND STARTER MOTOR GROUP

NOTE: For Key 10.

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	STARTER ASSEMBLY		
	191C150	1	To Spec J (See Separate Group for component parts)
	191C511	1	Begin Spec J (see separate for component parts)
2	FLANGE, STARTER MOUNTING		
	191C129	1	To Spec J
	191C508	1	Begin Spec J
3	*GENERATOR ASSEMBLY, CHARGE		
	191C159	1	To Spec F, Incl. Volt. Reg. (Less Pulley)
	191A277		Begin Spec F, Incl. Pulley (Less Voltage Regulator)
4	REGULATOR, VOLTAGE		
	191-386	1	To Spec F
	191A278	1	Begin Spec F
5	191C155	1	Bracket, Charge, Gen. Mtg., To Spec D

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
5A	191B240	1	Bracket, Chg. Gen. Mtg., Spec D Only
5B	191C279	1	Bracket, Chg. Gen. Mtg., Begin Spec F
6	191B156	1	Bracket, Chg. Gen. Adj. to Spec D
6A	191B239	1	Bracket, Chg. Gen. Adj., Spec D Only
6B	191C280	1	Bracket, Gen. Adj., Begin Spec F
	BAND, CHARGE GENERATOR MOUNTING		
7	191A157	1	To Spec D
7A	191A 242	1	Spec D Models Only
8	511-51	1	Belt, Charge Generator Drive
9	515-105	1	Key, Charge Generator Pulley
10	PULLEY, CHARGE GENERATOR DRIVEN		
	191A164	1	To Spec F
	*	1	Begin Spec F
11	321-94	1	Fuse, 5-Amp. - To Spec F

* - For Components, Check Charge Generator or Regulator Nameplate and contact nearest dealer.



FUEL PUMP PARTS GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTION
	149D693	1	Pump, Fuel (Illustrated in Fuel System Group)
	149K526	1	Repair Parts Kit, Incls. parts marked *
1		1	Body, Not Sold Separately
2	815-148	4	Screw, Self Tapping, #8-32 x 7/8"
3	815-147	2	Screw, Phillips Self Tapping, # 6-32 x 5/8". Valve Retainer
4	149-96	2	*Valve and Cage.
5	149A95	2	*Gasket, Valve.
6	149A582	1	*Diaphragm Assembly.
7	149A672	1	*Spring. Replaces 149A93.
8	149A539	1	Retainer, Valve Cage
9	149A675	1	*Spring, Replaces 149A94
10	516A113	1	Pin, Rocker Arm.
11		1	Body, Not Sold Separately
12	149-710	1	Link and Arm, Rocker, (only as a set)
14	149A551	1	Lever, Primer
15	509-65	2	Seal, "O" Ring
16	149A404	1	Spring, Primer Lever
17	149A3	1	*Gasket, Pump Mounting
18	518-129	1	Ring, Retainer, Primer Lever
19	149A858	1	*Gasket, Diapgragm - Lower Side.

* - Parts In Repair Kit.

SERVICE KITS AND MISCELLANEOUS

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	160K836	1	Ignition Tune-Up Kit
	168K103	1	Gasket Kit, Plant (Repl. 168K87)
	168K95	1	Carbon Removal Gasket Kit
	412C28	1	Cover, Canvas

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
	525P90		Paint, Touch-up (Pressurized Can) 12-oz., Mouse Grey Enamel
	525P137		Paint, Touch-up (Pressurized Can) 16-oz., Green Enamel

NOTE: For other Kits, refer to the Group for the Part in question.

SPECIAL PARTS SECTION (NOT ILLUSTRATED)

For 4CCK-3E2236/
5CCK-3E2236/

CONTRACTOR MODELS

Parts not listed in this section, refer to the standard parts groups. Use Key 2 for 4CCK and Key 6 for 5CCK.

GEAR COVER, OIL BASE AND OIL PUMP GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	505-342	1	Nipple, Oil Drain
2	505-28	1	Coupling, Oil Drain

FUEL SYSTEM GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	502-138	1	Elbow, Fuel Pump Inlet
2	149A775	1	Line, Fuel
3	145A94	1	Inlet, Carb. Air
4	140C537	1	Housing, Air Cleaner
5	140B538	1	Cover, Air Cleaner
6	140B495	1	Cartridge, Air Cleaner
7	140A554	1	Spacer, Air Cleaner Mtg. Screw
8	501A153	1	Line, Fuel (Pump to Filter)
9	503-280	1	Clamp, Air Inlet to Cleaner

AIR HOUSING AND OPTIONAL AIR SHUTTER GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	405B1663	1	Support, Hood
2	134B1469	2	Fastener, Hood
3	134A1019	1	Baffle, Fuel Pump Air

GENERATOR GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	231C124	1	Adapter, Gen. to Eng.
2	403C827	1	Yoke, Lifting

CONTROL GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	301D2880	1	Box, Control
2	301B2881	1	Panel, Cont. Box.
3	GROMMET, CONTROL BOX		
	508A2	1	For 1/2" Hole
	508-8	1	For 13/16" Hole
	508-9	1	For 1-3/8" Hole
4	313P18	1	Switch, Stop
5	308A28	1	Switch, Start
6	304A139	1	Resistor (2.5-Ohm, 25-W)
7	RECEPTACLE, DUPLEX		
	323-184	1	120-Volt
	323-213	1	240-Volt
8	305P235	1	Rectifier
9	305A256	1	Bracket,

SPECIAL PARTS SECTION (NOT ILLUSTRATED)

For 4CCK-1RV6000/
4CCK-2RV6000/
4CCK-3RV6000/
5CCK-1RV6000/
5CCK-2RV6000/
5CCK-3RV6000/

MOBILE PLANTS

Parts not listed in this section, refer to the standard parts groups. Use Key 3 for the 4CCK and Key 7 for 5CCK.

GEAR COVER, OIL BASE AND OIL PUMP GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	102A579	1	Base, Oil
2	309-10	1	Switch, Low Oil Pressure
3	CUSHION, PLANT MOUNTING		
	402B283	2	Engine End
	402B285	2	Generator End
4	402A290	4	Bushing, Mounting Spacer
5	402A282	4	Snubber, Shock Mtg.
6	WASHER, FLAT - CUSHION MTG.		
	526A198	As Req.	5/8" I.D. x 1-1/2" O.D. x 1/16"
	526-14	4	29/64" I.D. x 2-1/2" O.D. x 1/8"
	526A195	4	29/64" I.D. x 3-1/4" O.D. x 1/8"
	526A199	4	29/64" I.D. x 2-1/2" O.D. x 1/8" (Notched)

CRANKSHAFT, FLYWHEEL, CAMSHAFT AND PISTON GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	134A911	1	Plate, Blower Wheel

FUEL SYSTEM GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	154A817	1	Manifold, Intake
2	155B947	1	Muffler, Exhaust
3	153-223	1	Choke, Sisson
4	516-59	1	Pin, Cotter-Choke
5	152A155	1	Swivel, Choke
6	505-479	1	Cap, Pipe - Muffler
7	160B763	1	Bracket, Elect. Fuel Pump
8	149P650	1	Pump, Fuel (Electric)
9	502-20	2	Elbow, Fuel Pump
10	149B180	1	Filter, Fuel
11	505-98	1	Nipple, Filter to Pump
12	502-2	1	Elbow, Filter Inlet
13	332-556	1	Connector, Fuel Pump Lead
14	501-7	1	Line, Fuel
15	140C692	1	Cleaner, Air
16	503B410	1	Hose, Air Cleaner
17	140B693	1	Inlet, Carburetor Air

IGNITION GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	166A466	1	Bracket, Coil Mtg.

VACUUM SPEED BOOSTER, GOVERNOR AND MUFFLER GROUP

REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	150A159	1	Bracket, Gov. Spring.

GENERATOR GROUP

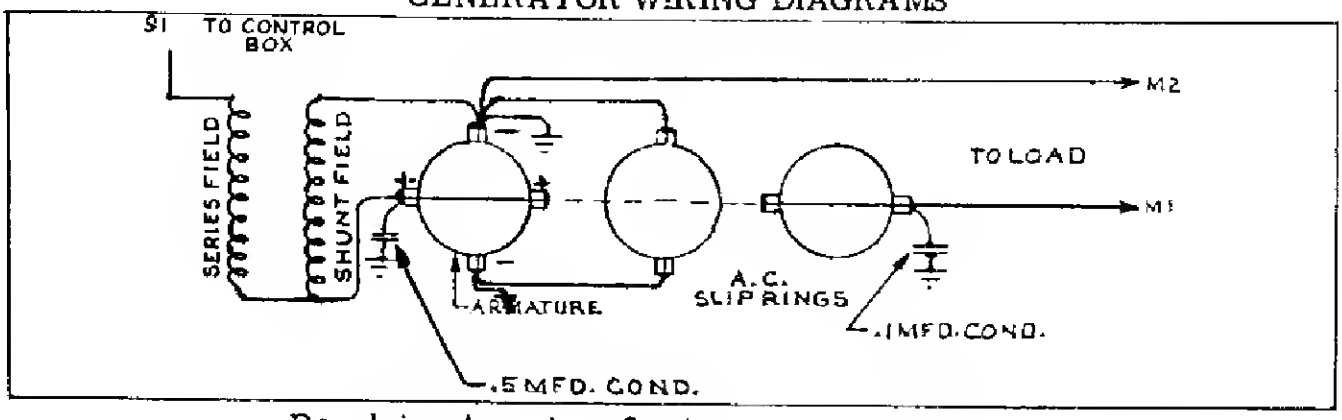
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	232D1798	1	Support, Generator
2	231E123	1	Adapter, Generator

CONTROL GROUP

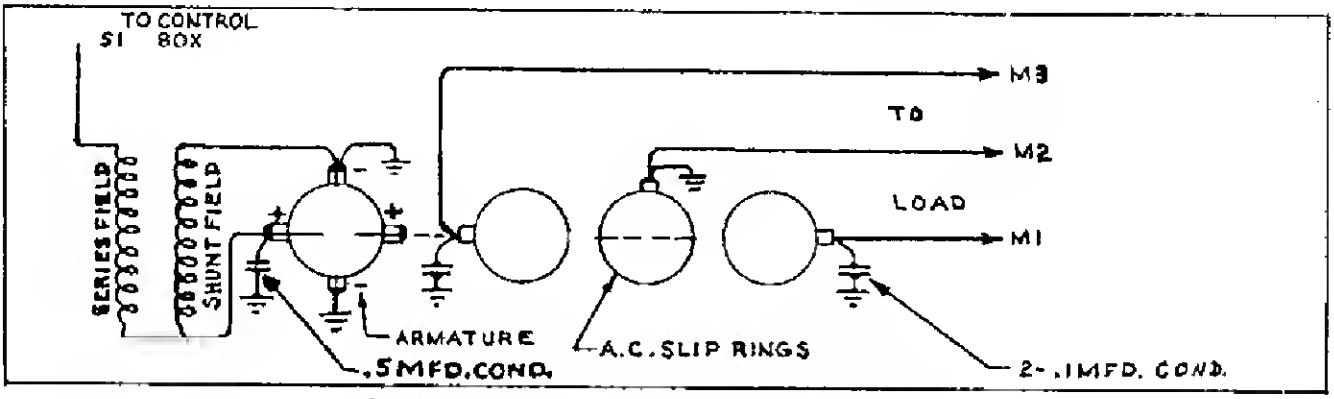
REF. NO.	PART NO.	QTY. USED	PART DESCRIPTIONS
1	301B2723	1	Box, Control
2	301B2722	1	Box, Relay & Terminal Blk.
3	307B642	1	Relay, Choke
4	332A609	1	Block, Term. (2-place)
5	308-97	1	Switch, Stop (Mtd. on Blower Hsg.)

TYPICAL WIRING DIAGRAMS

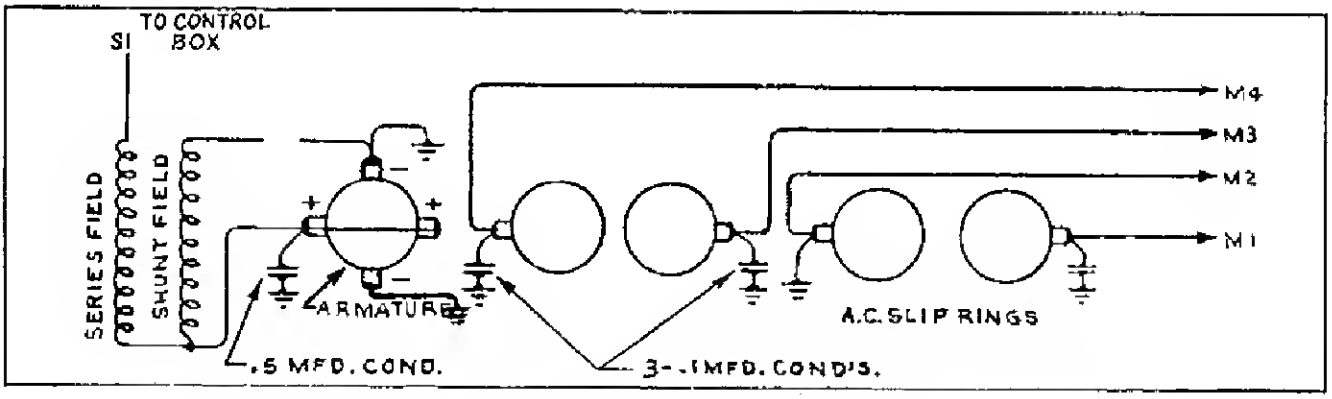
The wiring diagrams on the following pages are typical and apply only to standard CCK series generating plants. Wiring diagrams for special models are available on request from the factory; send generator model, spec, and serial numbers with the request.



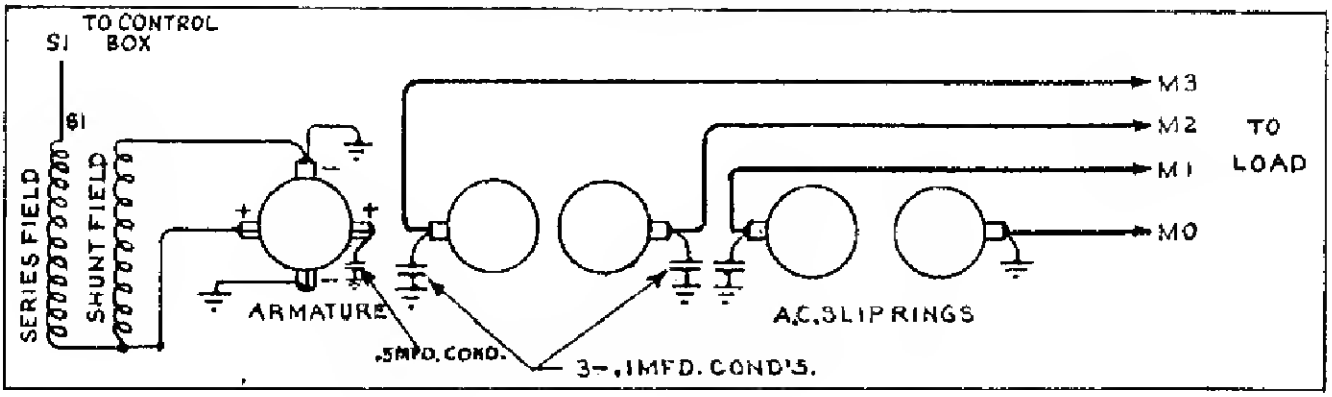
Revolving Armature 2-wire, Single Phase



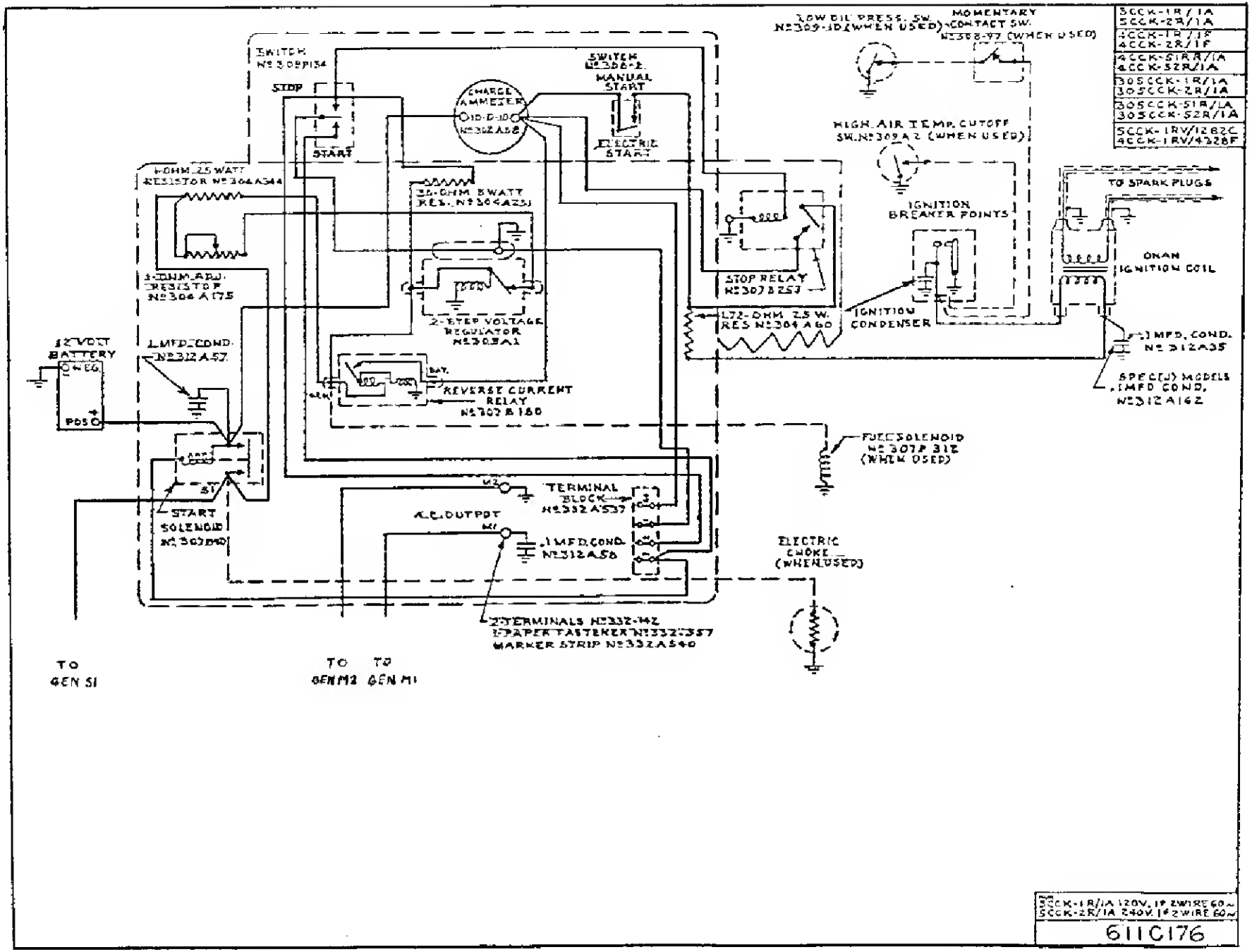
Revolving Armature 3-wire, Single Phase

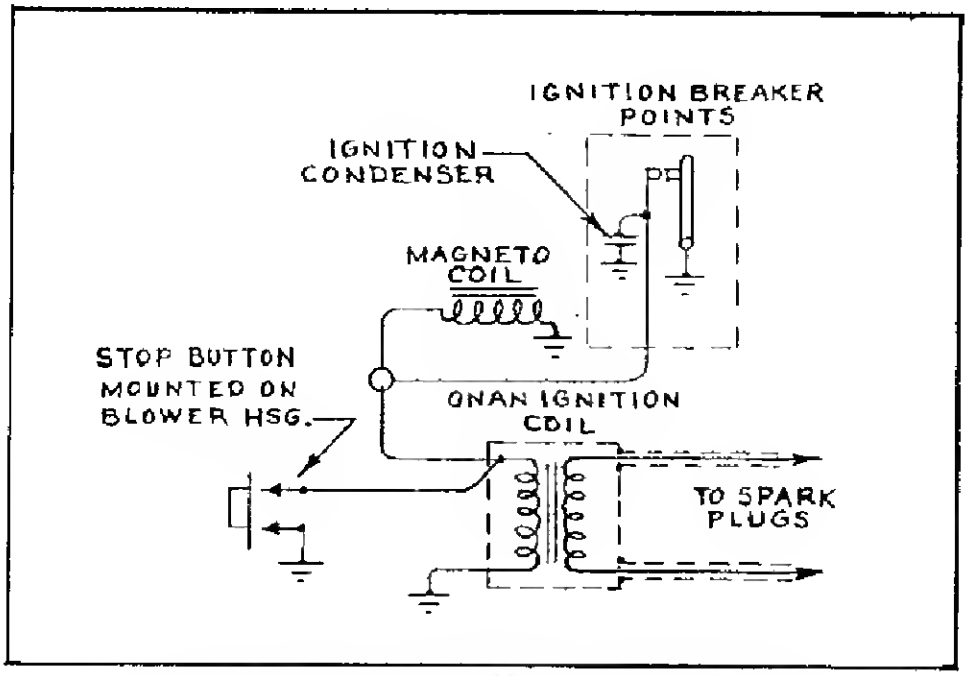


Revolving Armature Reconnectible for 120, 240 or 120-240 Volts, Single Phase (CCK-3CR)

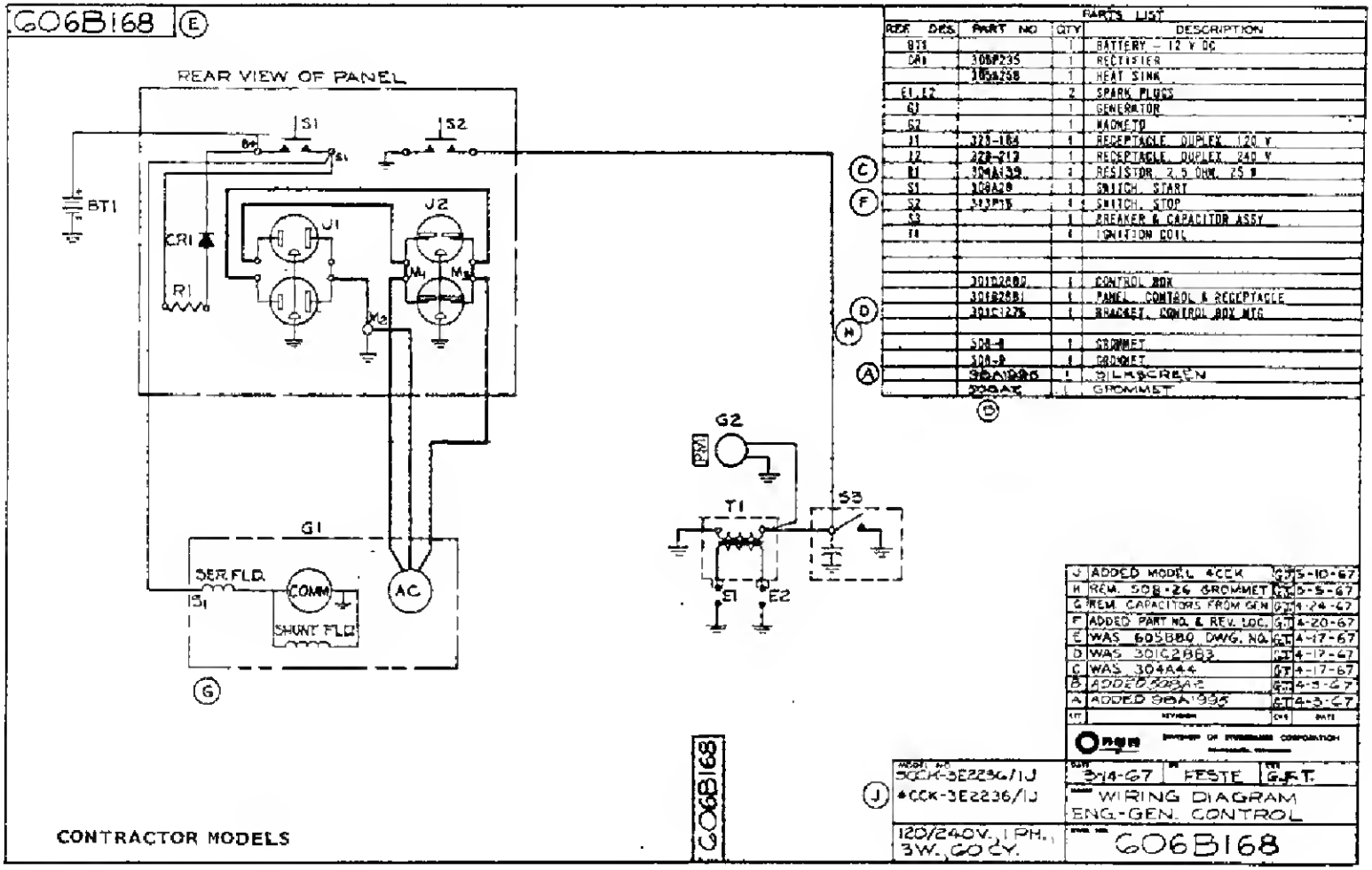


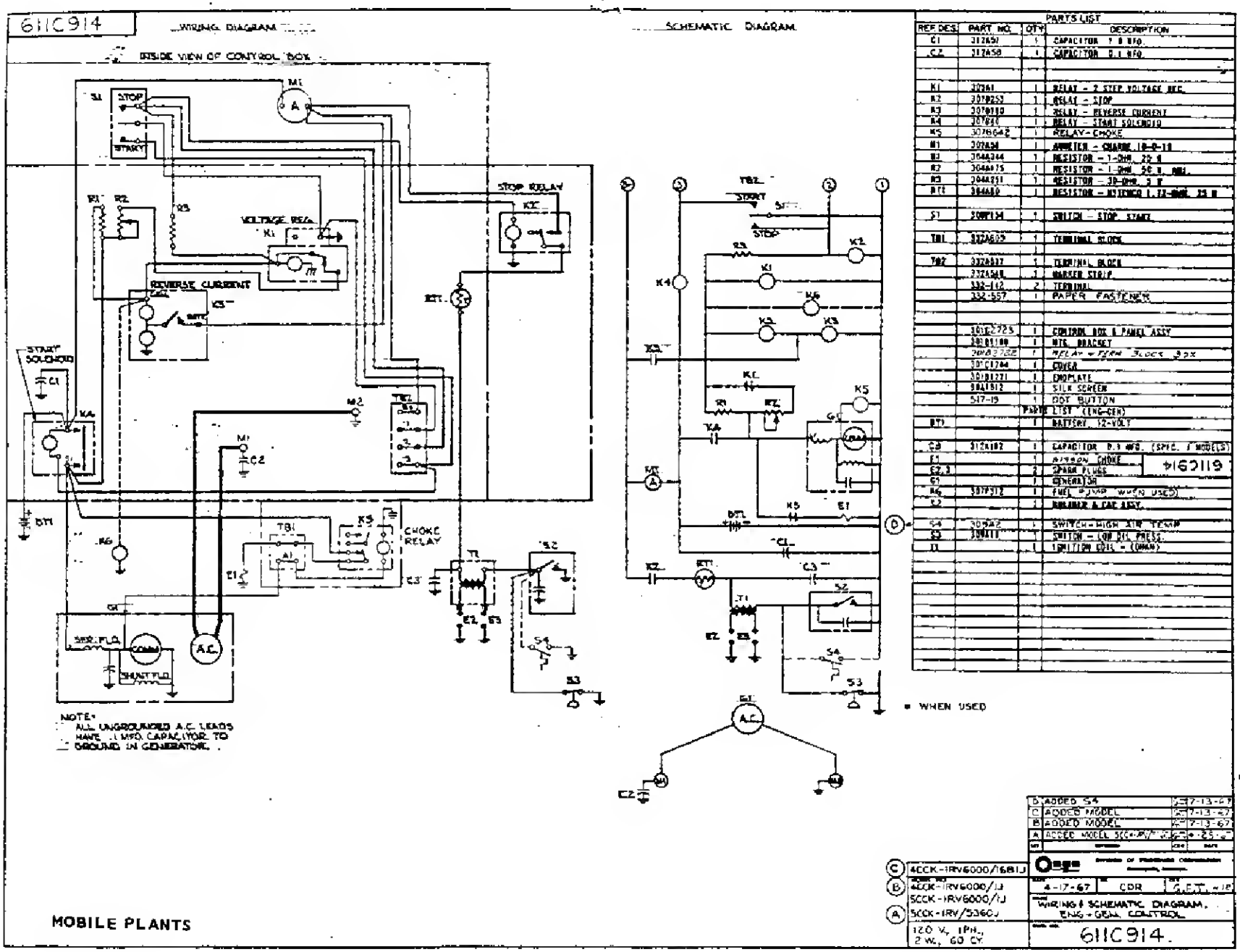
Revolving Armature 4-wire, Three Phase


5CCK-1R/1A
5CCK-2R/1A
4CCK-1R/1F
4CCK-2R/1F
4CCK-51R/1A
4CCK-52R/1A
305CCK-1R/1A
305CCK-2R/1A
305CCK-51R/1A
305CCK-52R/1A
5CCK-1RV/1282C
4CCK-1RV/4328F
LOW OIL PRESS. SW. Nº309-182 (WHEN USED)
MOMENTARY CONTACT SW. Nº368-92 (WHEN USED)
SWITCH Nº309P154
STOP
START
CHARGE AMMETER
SWITCH Nº366-2
MANUAL START
ELECTRIC START
HIGH AIR TEMP. CUTOFF SW. Nº309A2 (WHEN USED)
TO SPARK PLUGS
IGNITION BREAKER POINTS
ONAN IGNITION COIL
4-OHM 25 WATT RESISTOR Nº304A344
30-OHM 5 WATT RES. Nº304A235
3-OHM ADJ. RESISTOR Nº304A175
2-STEP VOLTAGE REGULATOR Nº303A1
STOP RELAY Nº307B253
172-OHM 2.5 W. RES Nº304A60
IGNITION CONDENSER
.1 MFD. COND. Nº312A35
SPEED(J) MODELS .1 MFD COND. Nº312A162
12 VOLT BATTERY
NEG.
POS.
1 MFD. COND. Nº312A57
REVERSE CURRENT RELAY Nº307B180
BAT.
GEN.
FUEL SOLENOID Nº307P312 (WHEN USED)
TERMINAL BLOCK Nº332A537
M2
M1
A.C. OUTPUT
START SOLENOID Nº303P40
S1
.1 MFD. COND. Nº312A56
ELECTRIC CHOKE (WHEN USED)
2 TERMINALS Nº332-142
2 PAPER FASTENER Nº332-357
MARKER STRIP Nº332A540
TO GEN S1
TO GEN M2
TO GEN M1
5CCK-1R/1A 120V. 1Ø 2WIRE 60~
5CCK-2R/1A 240V. 1Ø 2WIRE 60~
611C176



TYPICAL WIRING DIAGRAM OF MAGNETO IGNITION USED ON MANUAL AND PORTABLE TYPE PLANTS


606B168 (E)
REAR VIEW OF PANEL
S1
S2
BT1
CR1
R1
J1
J2
M1
M2
G1
SER.FLD.
COMM.
AC
SHUNT FLD.
G2
PM
T1
S3
E2
PARTS LIST
REF DES | PART NO | QTY | DESCRIPTION
BT1 | | 1 | BATTERY – 12 V DC
CR1 | 306P235 | 1 | RECTIFIER
| 306A758 | 1 | HEAT SINK
E1, E2 | | 2 | SPARK PLUGS
G1 | | 1 | GENERATOR
G2 | | 1 | MAGNETO
J1 | 323-184 | 1 | RECEPTACLE, DUPLEX, 120 V
J2 | 323-212 | 1 | RECEPTACLE, DUPLEX, 240 V
R1 | 304A139 | 1 | RESISTOR, 2.5 OHM, 25 W
S1 | 108A28 | 1 | SWITCH, START
S2 | 243P15 | 1 | SWITCH, STOP
S3 | | 1 | BREAKER & CAPACITOR ASSY
T1 | | 1 | IGNITION COIL
| 301D2880 | 1 | CONTROL BOX
| 301B2881 | 1 | PANEL, CONTROL & RECEPTACLE
| 301C1275 | 1 | BRACKET, CONTROL BOX MTG
| 508-8 | 1 | GROMMET
| 508-9 | 1 | GROMMET
| 98A1995 | 1 | OIL SCREEN
| 508A2 | 1 | GROMMET
J ADDED MODEL 4CCK 5-10-67
H REM. 508-26 GROMMET 5-5-67
G REM. CAPACITORS FROM GEN 4-24-67
F ADDED PART NO. & REV. LOC. 4-20-67
E WAS 605880 DWG. NO. 4-17-67
D WAS 301C2883 4-17-67
C WAS 304A44 4-17-67
B ADDED 508A2 4-3-67
A ADDED 98A995 4-3-67
ONAN
5CCK-3E2236/1J
4CCK-3E2236/1J
3-14-67 FESTE G.F.T.
WIRING DIAGRAM
ENG.-GEN. CONTROL
120/240V. 1 PH. 3W. 60 CY.
606B168
606B168
CONTRACTOR MODELS



PARTS LIST

REF DES	PART NO.	QTY	DESCRIPTION
C1	312A51	1	CAPACITOR 1 0 MFD.
C2	312A58	1	CAPACITOR 0.1 MFD.
K1	32261	1	RELAY - 2 STEP VOLTAGE REG.
K2	3078253	1	RELAY - STOP
K3	3078310	1	RELAY - REVERSE CURRENT
K4	307811	1	RELAY - START SOLENOID
K5	3078642	1	RELAY-CHOKE
M1	307A34	1	AMMETER - CHARGE 10-0-10
R1	3044344	1	RESISTOR - 1-OHM, 22 W
R2	3044375	1	RESISTOR - 1-OHM, 50 W, WIRE.
R3	3044251	1	RESISTOR - 30-OHM, 3 W
RT1	304A30	1	RESISTOR - THERMCO 1.73-OHM, 25 W
S1	308P134	1	SWITCH - STOP, START
TB1	332A609	1	TERMINAL BLOCK
TB2	332A537	1	TERMINAL BLOCK
	332A548	1	MARKER STRIP
	332-112	2	TERMINAL
	332-557	1	PAPER FASTENER
	301C2725	1	CONTROL BOX & PANEL ASSY
	301B1188	1	MTG. BRACKET
	308B1722	1	RELAY - TERM. BLOCK 3 PC
	301C1744	1	COVER
	301B1271	1	ENDPLATE
	9A1812	1	SILK SCREEN
	517-19	1	DOT BUTTON
			PARTS LIST (ENG-GEN)
BT1		1	BATTERY 12-VOLT
C3	312A182	1	CAPACITOR 0.1 MFD. (SPEC. F MODELS)
E1		1	AIRGAP CHOKE
E2,3		2	SPARK PLUGS
G1		1	GENERATOR
M2	307P512	1	FUEL PUMP (WHEN USED)
S2		1	RUBBER & CAP ASSY.
S4	309A2	1	SWITCH-HIGH AIR TEMP
S5	309A11	1	SWITCH - LOW OIL PRESS.
T1		1	IGNITION COIL - (OHMS)

9162119

D	ADDED S4	JE	7-13-67
C	ADDED MODEL	JE	7-13-67
B	ADDED MODEL	JE	7-13-67
A	ADDED MODEL 5CCK-IRV/5360J	JE	4-25-67

C	4CCK-IRV6000/16B1J
B	4CCK-IRV6000/1J 5CCK-IRV6000/1J
A	5CCK-IRV/5360J
	120 V., 1PH., 2 W., 60 CY.

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4-17-67	CDR	C.D.T. 4-18

WIRING & SCHEMATIC DIAGRAM, ENG-GEN. CONTROL

6IIC914.